

# **Accomplishment Report for CSU Larval Fish Cataloging Project**

**Larval Fish Cataloging Project for Canyonlands National Park,  
Dinosaur National Monument, and  
Glen Canyon National Recreation Area**

**National Park Service, U.S. Department of the Interior  
Cooperative Agreement 1200-99-009 CSU-84, CSU-86  
1 November 2003 through 31 July 2005**

**Final Report**

**Submitted to**

**Linda P. Clement, Museum Curator  
(Project Contracting Officer and Technical Representative)**

**National Park Service, IMSO-DE-CR  
12795 West Alameda Parkway  
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**30 September 2005**

by

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***Laboratory for the Study and Identification of Fishes in North American Fresh Waters***

Research  
Early Life Stages/Adults  
Native Fish Biology/Ecology  
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Education  
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Identification/Verification  
Sample Processing/Depository  
Descriptions/Keys/Illustrations



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Prepared for

Linda P. Clement, Project COTR  
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## **Executive Summary**

The Larval Fish Laboratory (LFL) Collection currently includes among its holdings of preserved fish (mostly larvae, early through yearling juveniles, and small adults) a total of 25,679 cataloged lots (787,819 specimens) collected from within National Park Service (NPS) units, specifically Canyonlands National Park, Dinosaur National Monument, and Glen Canyon National Recreation Area. These specimens are held, maintained, and managed on behalf of the NPS. Through this project, these specimens were identified, cross-cataloged with the associated NPS units for entry of associated data in the NPS ANCS+ database, and relabeled with NPS accession and catalog numbers. Copies of associated hardcopy files also were forwarded to the appropriate NPS unit. On-going procedures have been established for cross-cataloging newly deposited NPS material as it is cataloged in the LFL Collection.

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The Larval Fish Laboratory (LFL; <http://www.CNR.ColoState.edu/LFL/>) Collection is a repository for preserved eggs, larvae, small juveniles, and small adults of freshwater and anadromous fishes from across the North American continent. Holdings currently total more than 3.2 million fish in over 94,000 cataloged lots (plus a backlog of about 12,000 lots of yet-to-be-cataloged specimens). Over 200 species are represented, including threatened and endangered taxa. The purpose of the LFL Collection is to maintain and provide controlled public access to these specimens and associated collection and specimen data as a long-term taxonomic, biological, and natural-history resource. It is especially intended to further LFL's own functions of research, service, and education and help safeguard potentially valuable voucher, study, or reference specimens from throughout the continent that might otherwise be discarded and lost to science.

Holdings are cataloged (databased) in a customized version of Specify, a biodiversity collection management program developed and maintained with National Science Foundation support. Specimens are cataloged and maintained in lots consisting of either individual

specimens or, more commonly, batches of specimens of the same taxon from the same field collection, sample, or other source. Most lots are preserved in solutions of formalin, ethanol, or isopropanol; some specimens have been cleared and stained for skeletal study and are stored in glycerol. Preservative levels are checked annually. Voucher specimens are stored by container size and catalog number on dedicated shelving in the laboratory and a collection annex room. Reference and study specimens, including many sets of cultured specimens used for developmental, taxonomic, and experimental investigations, are stored for more ready access in over-counter cabinets in the laboratory by taxon, container size, and catalog number.

As the continuing repository for most larval and small fish collected and preserved since the late 1970s from the Upper Colorado River Basin (UCRB), over 90% of the cataloged holdings have been deposited by agencies (including the National Park Service, NPS) participating in the Upper Colorado River Endangered Fishes Recovery Program, which currently funds the care and management of those specimens. Of these, 787,819 specimens in 25,679 cataloged lots were collected from NPS units in the UCRB, specifically Canyonlands National Park (CANY), Dinosaur National Monument (DINO), and Glen Canyon National Recreation Area (GLCA). These specimens are technically held, maintained, and managed as part of the LFL Collection on behalf of the NPS, which retains ownership.

The primary purpose of the CSU Larval Fish Cataloging Project was to cross-catalog these holdings by: (1) assigning NPS unit collection accession and catalog numbers to each lot, (2) entering these numbers in the LFL Collection Catalog, (3) replacing lot container labels with new labels including the NPS numbers, (4) copying associated specimen and collection data from the LFL Collection Catalog (Specify) to park unit curators for uploading into NPS's Automated National Catalog System (ANCS+), and (5) forwarding photocopies of associated hard-copy files to park unit curators. The project also called for establishing or updating formal long-term loan agreements authorizing the custodial care of these specimens and establishing on-going procedures for cross-cataloging future NPS material deposited with the LFL Collection as it is cataloged.

Summaries of holdings by park unit with tallies by taxon and detailed listings by collection set with associated NPS accession and catalog numbers are provided in Appendices I, II, and III at the end of this report. The number of lots cross-cataloged through this project is nearly twice the 13,698 lots (540,136 specimens) identified as NPS holdings when the initial scope of work for this project was defined in 2001. Nearly all additional lots are DINO holdings. Many of these additional lots were cataloged as Green River collections for which recorded river-kilometer localities were mistakenly based on distance from Green River, Utah, rather than the confluence with the Colorado River (problem since corrected); they therefore appeared to have been collected below DINO. Others were more recently collected (through September 2004) or backlog holdings (mostly mid 1990s) that were processed and cataloged after this project was planned. Some of the backlog DINO collections were further processed and cataloged under this project (non-endangered fish taxa in larval-fish drift collections taken from the Yampa River in 1995 and 1996 and the upper Green River in 1995).

Upon submission of a list of holdings to each of the three NPS units for which LFL holds specimens, all LFL cataloged holdings of NPS specimens were assigned NPS accession and catalog numbers by the respective unit curators, Vicki Webster (CANY), Ann Elder (DINO), and Chris Kincaid and Gwenn Gallenstein (GLCA). Those numbers have been entered in our

collection catalog (Specify) and printed on new, specially revised, collection container labels (Figure 1). The new labels have been or are being substituted for our former container labels, with fluid levels and container condition checked and attended to in the process. Label replacement for the majority of DINO holdings, as well as a second round of label replacement for GLCA holdings (we were originally given the wrong GLCA accession numbers and early in August had to correct our catalog records and reprint labels), will continue until completed, probably within the next couple of months. The project agreement called for preparation of a "hand-written list" of corresponding LFL and NPS catalog numbers as NPS accession and catalog numbers were added to the LFL catalog as a check on those entries and for future cross-referencing. However, such would have been unnecessarily time consuming (25,679 pairs of numbers) and was effectively bypassed by electronically generating such lists and summarizing corresponding series of these numbers in the tabulated lists of unit holdings by collection sets for CANY (Appendix I), DINO (Appendix II), and GLCA (Appendix III).

<b>LFL 18192</b>	<b>Cyprinidae: 15</b>
NPS: Acc# DINO-00422,Cat# DINO 23286	
<b><i>Ptychocheilus lucius</i></b>	
N = 5, 9.9-12.0 mmTL	Dev Int: LR
3% buffered formalin	Id: LFL/1985
<b>FWS/V-85L-YA144</b>	<b>07/21/1985</b>
North America, USA, Colorado, Moffat Co.	
Yampa River	River Km: 2.1
Main channel,embayment	
Gear: Fine mesh seine	Col: EW/JH-CDOW-US
V:1-vial	Larval Fish Laboratory, Colo. St. Univ.

**Figure 1.** Enlarged example of LFL Collection container label with NPS accession and catalog numbers

Because we had converted our collection catalog database from MUSE to Specify, we can now, without much difficulty, export and appropriately modify required fields from our Specify records for NPS ANCS+ import files, thereby making it unnecessary for Re:discovery Software Inc. to develop a special conversion program for our catalog records. I consulted with Scott Stone of Re:discovery Software, worked with Vicki in configuring an appropriate ANCS+ import template file (as either a comma-delimited text or Microsoft Excel spreadsheet file), exported corresponding fields from our LFL Specify catalog records for CANY, DINO, and GLCA holdings, made the necessary modifications to fit that data to the template, and forwarded the import data to each NPS unit curator as Microsoft Excel files (Table 1). As Excel files, these data are easily reviewed by each curator prior to output as comma-delimited text files and import to the ANCS+ database. For convenience and reference, I also provided each NPS unit curator with an associated Access database file of selected fields from our Specify catalog records that includes data not imported to the ANCS+ database.

According to our cooperative agreement, upon completion of the project, I am to provide the project contracting officer and technical representative with an electronic database of our NPS holdings in MUSE or Specify format for subsequent migration to ANCS+ via a conversion program written by Re:discovery Software. However, as discussed above, we have effectively bypassed the need for that step.

As required by the project agreement, we have sent to each park-unit curator photocopies of all hard-copy materials in our files that are associated with holdings from their unit (e.g., field sheets, processing records, collection content reports). However, there is little consistency in the availability and nature of this material for the various sets of collections (none for some), and except for length frequency data, the contents are not likely to include much, if any, information not already provided in the Excel import or associated Access database files.

**Table 1. NPS Collection catalog (ANCS+) fields and corresponding LFL Collection catalog (Specify) fields (or data entries) used in import-template files submitted to NPS units for which LFL maintains specimens. (ANCS+ fields and desired content as specified by Vicki Webster, CANY, 16 August 2005).**

<b>ANCS+ import field name</b>	<b>LFL-Specify field name (or data entries)</b>
Catalog Number	X-CatalogNumber
Accession Number	X-AccessionNumber
Associated Spec	[blank]
Cataloger	Cataloger
NPS Class 1	"BIOLOGY"
NPS Class 2	"ANIMALIA"
NPS Class 3	ParentTaxonNameIDXXXXFullTaxonName
NPS Class 4	TaxonNameIDXXXXFullTaxonName
Collection Date	DateStartOnly (reformat to mo/da/yr)
Collection Number	FieldNumber
Collector	Collectors
Common Name	CommonName
Condition	"COM/GD"
County	County
Elevation	[blank]
Exotic/Native	"Exotic" or "Native"
Habitat	[blank]
Identified By	Determiner
Locality	WaterBody+", river km"+River km+"; "+Locality
Location	"Larval Fish Laboratory Collection, Colorado State University"
Maintenance Cycle	"1.0/2005"
Object Status	"LOAN OUT - NON-NPS"
Park	"CANY"
Scientific Name	TaxonNameIDFullTaxonName (insert " __ __" after genus)
Status Date	"2005"
Storage Unit	"EA"
UTM Z/E/N	[blank]
TRS	Legaldesc
Lat Long N/W	Lat1Entry+" "+Long1Entry
Controlled Property	"N"
Other Numbers	CollectionIdentifier+" "+ Catalog Number
Item Count	Count
Waterbody/Drainage	WaterBody
Description	"Storage-"+Storage+", "+Prep type+", "+Preservative+" / Specimen(s)-"+Developmental interval(s)+", "+MinLength+"- "+MaxLength+" mm "+TL/SL+", Year-class "+Age+" / Determination questionable-"+Questionable

I have communicated to each park-unit curator the need to establish (DINO and GLCA) or update (CANY) formal loan agreements authorizing LFL to continue to hold, maintain, and manage the use of our NPS holdings on their behalf. However, I expect those agreements may not be forthcoming until after the respective units have actually imported records of our holdings in the NPS ANCS+ database.

Except for this final report, inserting replacement labels in many specimen containers (which is ongoing and should be completed this fall), and submission of ANCS+ import files, associated database files, and photocopies of all associated printed or hand-written documentation in our files to each NPS unit (between 23 August and 9 September), this project was concluded and all funds expended by 31 July 2005. Work conducted beyond 31 July was or will be completed under LFL's on-going Upper Colorado River Endangered Fish Recovery Program project for collection management.

For future additions to our NPS holdings, LFL now has standardized Specify queries and Excel templates ready for preparation and submission of ANCS+ import files, which will now be done as part of our standard cataloging process. Immediately before any new or additional backlog sets of NPS collections are cataloged, we will request a sequence of NPS catalog numbers (and a NPS accession number if not already assigned). Once those lots of specimens are cataloged, labeled, and shelved, we will prepare and submit associated ANCS+ import files and photocopies of associated hard-copy files to the appropriate park-unit curator. Accordingly, there should be no need for future retro-cross-cataloging projects such as this between NPS and LFL. Aside from substantial delays on my part in completing this project, covering far more cataloged holdings than expected, and initially planning for the preparation and use of an ANCS+ conversion program, which proved unnecessary, this project was well planned and, in my opinion, could not have been done more efficiently.

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**Appendix I**

**Larval Fish Laboratory Collection–National Park Service Holdings  
From Canyonlands National Park (CANY)**

(Note: each LFL Collection and NPS catalog number represents either a single specimen or a discrete lot of fish, which normally consists of all specimens of a single taxon from a single collection or source.)

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**ANCS+ import file of holdings submitted as an Excel spreadsheet.**

CANYallforNPSimportfile3.xls

**Associated Access database of selected fields extracted from LFL's Specify catalog.**

LFL Collection CANY-all.mdb

**Summary of holdings by river reach.**

Colorado River (CO) kilometers 325.7 to 349.1 (river miles 202.4 to 216.9) above Lees Ferry, AZ, Cataract Canyon to confluence with Green River:  
237 cataloged lots, 1,198 specimens, from 124 collections, 26 July 1985 to 21 August 1987, river km 327.3 to 349.1.

Colorado River kilometers 0.0 to 49.7 (river miles 0.0 to 30.9) at to above confluence with Green River:  
2126 cataloged lots, 218,390 specimens, from 577 collections, 22 July 1981 to 5 September 2001, river km 0.0 to 49.6.

Green River (GR) kilometers 0.0 to 73.7 (river miles 0.0 to 45.8) at and above confluence with Colorado River:  
1634 cataloged lots, 77,510 specimens, from 713 collections, 19 July 1981 to 5 September 2001, river km 0.0 to 73.6.

Colorado River or Green River lots without river kilometer designations:  
1 cataloged lot, 1 specimen, from 1 collection, June 1987 (BIOWEST-87-057).

Total:  
3,998 cataloged lots, 297,099 specimens, from 1,415 collections, 22 July 1981 to 5 September 2001.

## Number of specimens by taxon in LFL Collection from NPS-CANY.

<b>Taxon<sup>a</sup></b>	<b>No. of Specimens</b>	<b>Size Range (mm TL)</b>	<b>No. of lots</b>
<i>Cyprinella lutrensis</i>	174,063	<5 -80	1,102
<i>Cyprinus carpio</i>	81	<5 -90	39
<i>Gila atraria</i>	2	93 -101	2
<i>Gila cypha</i>	8	30 -50	8
<i>Gila robusta</i>	258	<10 -50	62
<i>Gila robusta x cypha</i>	1	35	1
<i>Gila sp.</i>	90	6 -60	55
<i>Notropis stramineus</i>	63,234	<5 -70	712
<i>Pimephales promelas</i>	32,866	<5 -80	582
<i>Ptychocheilus lucius</i>	1,128	<10 -118	253
<i>Rhinichthys osculus</i>	447	<10 -50	140
<i>Richardsonius balteatus</i>	6	16 -25	6
Cyprinidae sp.	17,536	<5 -30	261
<i>Catostomus commersonii</i>	15	11 -70	10
<i>Catostomus discobolus</i>	2,046	<10 -60	264
<i>Catostomus latipinnis</i>	872	11 -80	213
<i>Catostomus sp.</i>	1	14 -14	1
<i>Xyrauchen texanus</i>	1,891	6 -20	81
Catostomidae sp.	28	9 -40	17
<i>Ameiurus melas</i>	32	11 -60	13
<i>Ameiurus natalis</i>	1	11 -20	1
<i>Ictalurus punctatus</i>	120	11 -70	51
<i>Fundulus zebrinus</i>	43	6 -60	19
<i>Gambusia affinis</i>	212	6 -50	44
<i>Lepomis cyanellus</i>	49	11 -90	33
<i>Lepomis macrochirus</i>	1	51 -60	1
<i>Micropterus salmoides</i>	9	31 -137	6
Actinopterygii sp. <sup>b</sup>	2,059	<5 -40	21
<b>Totals</b>	<b>297,099</b>	<b>&lt;5 -137</b>	<b>3,998</b>

<sup>a</sup> As indicated in the LFL Collection catalog database, the identity of some specimens in many taxa is questionable.

<sup>b</sup> Specimens unidentified even to family either because of damage or incomplete processing (e.g., only endangered species identified and segregated from the rest of the collection).

## Number of cataloged specimens by taxon in LFL Collection from NPS-CANY by NPS accession number.

NPS-Accession #, CANY- Taxon <sup>a</sup> / Years	00233 '89 in part	00234 '89 in part	00235 '89 in part	00236 '89 in part	00326 1981-2001
<i>Cyprinella lutrensis</i>	1,794	3,570	623	693	167,383
<i>Cyprinus carpio</i>		169			81
<i>Gila atraria</i>					2
<i>Gila cypha</i>					8
<i>Gila robusta</i>					258
<i>Gila robusta x cypha</i>					1
<i>Gila sp.</i>		1		3	86
<i>Notropis stramineus</i>	17	613	109	268	62,227
<i>Pimephales promelas</i>	39	556	19	144	32,108
<i>Ptychocheilus lucius</i>		2			1,126
<i>Rhinichthys osculus</i>		3			444
<i>Richardsonius balteatus</i>					6
Cyprinidae sp.					17,367
<i>Catostomus commersonii</i>					15
<i>Catostomus discobolus</i>		15			2,031
<i>Catostomus latipinnis</i>		1			871
<i>Catostomus sp.</i>					1
<i>Xyrauchen texanus</i>					1,891
Catostomidae sp.					28
<i>Ameiurus melas</i>					32
<i>Ameiurus natalis</i>					1
<i>Ictalurus punctatus</i>					120
<i>Fundulus zebrinus</i>					43
<i>Gambusia affinis</i>					212
<i>Lepomis cyanellus</i>					49
<i>Lepomis macrochirus</i>					1
<i>Micropterus salmoides</i>					9
Actinopterygii sp. <sup>b</sup>					2,059
Totals	1,850	4,930	751	1,108	288,460

<sup>a</sup> As indicated in the LFL Collection catalog database, the identity of some specimens in many taxa is questionable.

<sup>b</sup> Specimens unidentified even to family either because of damage or incomplete processing (e.g., only endangered species identified and segregated from the rest of the collection).

## Tabulated list of CANY holdings by collection set with NPS accession and catalog numbers.

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	CANY Catalog #s	
1981	CO above GR Seine /dip net	48	FWS/GJ-81L-GS06, PM04 to PM18, PS07, PS08, GS07	16241 to 16243 16270 to 16306 16332 to 16336 16244 to 16246	CANY-00326	41053 to 41055 41056 to 41092 41093 to 41097 41098 to 41100	
	GR Seine	21	FWS/V-81L-GR307 to 312, 316 to 317, 319, 322, 323, 325, 327, 334	16917 to 16925 16926 to 16931 16932 to 16937	CANY-00326	41101 to 41109 41110 to 41115 41116 to 41121	
1983	CO above GR Seine	66	FWS/GJ-83L-009 to 014, 024, 087, 089, 093, 107, 113, 176, 178, 223 to 225, 227 to 229, 231, 233	14685 to 14699 14721 to 14723 14907 to 14909 14912 to 14915 14925 to 14928 14964 to 14967 14978 to 14980 15163, 15164 15167, 15168 15285 to 15293 15297 to 15304 15306 to 15311 15314 to 15316	CANY-00326	41122 to 41136 41137 to 41139 41140 to 41142 41143 to 41146 41147 to 41150 41151 to 41154 41155 to 41157 41158, 41159 41160, 41161 41162 to 41170 41171 to 41178 41179 to 41184 41185 to 41187	
				40		FWS/GJ-83Y-012 to 013, 028 to 029, 041, 044, 048 to 050, 053 to 054	43078 to 43082 43144 to 43150 43204 to 43206 43219 to 43220 43227 to 43237 43386 to 43389 43247 to 43254
	GR Seine	27	FWS/V-83L-GR01 to 05, 07	19765 to 19785 19787 to 19792	CANY-00326	41228 to 41248 41249 to 41254	
	1984	CO above GR Seine	79	FWS/GJ-84L-005, 010, 013, 015, 025, 038, 091, 094, 096, 098 to 100, 139, 143, 146, 148, 150, 152, 157, 160 to 162, 164, 169, 191 to 192, 194, 196	13967 to 13969 13977 to 13978 13987 to 13992 13996 to 13999 14029 to 14032 14065 to 14067 14295 to 14297 14302 to 14303 14308 to 14309 14312 to 14315 14460 to 14461 14472, 14479 14482 to 14485 14489 to 14491 14494 14507 to 14508 14512 to 14524 14530 to 14534 14551 to 14556 14601 to 14603 14605 to 14607 14609 to 14610	CANY-00326	41255 to 41257 41258 to 41259 41260 to 41265 41266 to 41269 41270 to 41273 41274 to 41276 41277 to 41279 41280 to 41281 41282 to 41283 41284 to 41287 41288 to 41289 41290, 41291 41292 to 41295 41296 to 41298 41299 41300 to 41301 41302 to 41314 41315 to 41319 41320 to 41325 41326 to 41328 41329 to 41331 41332 to 41333

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	CANY Catalog #s				
1985	GR Seine	69	FWS/GJ-84Y-011,	42470, 42471, 42736	CANY-00326	41334 to 41336				
			015,	42479 to 42481		41337 to 41339				
			017,	42486, 42487		41340, 41341				
			022,	42499, 42500		41342, 41343				
			025,	42508 to 42510		41344 to 41346				
			035, 044,	42530, 42959		41347, 41348				
			057,	42562, 42563,		41349, 41350				
				42976, 42977		41351, 41352				
			145,	42741 to 42745		41353 to 41357				
			152 to 153,	42758 to 42772		41358 to 41372				
			161,	42785		41373				
			182,	42750,		41374				
	42843 to 42846	41375 to 41378								
	188 to 190,	42868 to 42871	41379 to 41382							
	193 to 197,	42880 to 42894,	41383 to 41397							
		42779, 43036	41398, 41399							
	199 to 201	42896 to 42898	41400 to 41402							
1985	CO below GR Drift net	25	FWS/GJ-84L-006,	13970 to 13971	CANY-00326	41403 to 41404				
			008,	13974 to 13975		41405 to 41406				
			011 to 012,	13979 to 13986,		41407 to 41414				
				14648		41415				
			014,	13993 to 13995		41416 to 41418				
			163,	14525 to 14529		41419 to 41423				
			166	14539 to 14542		41424 to 41427				
			CO below GR Electrofishing	44		FWS/V-84L-GRB01 to B13,	19402 to 19434	CANY-00326	41428 to 41460	
						B19 to B20, B22 to B23,	19447 to 19454		41461 to 41468	
						C46, C83	19629, 19630, 19726		41469 to 41471	
			CO below GR Seine	5		ERI-85DRI-003 to 005,009,010	67055 to 67057,	CANY-00326	41472 to 41474	
							67061, 67062		41475, 41476	
CO above GR Seine	76	ERI-85ELE-011 to 012	67063, 67064	CANY-00326	41477, 41478					
		ERI-85SEI-013 to 019,	67065 to 67077		41479 to 41491					
		026 to 052,	67087 to 67127		41492 to 41532					
		062 to 071,	67141 to 67159		41533 to 41551					
		074 to 076	67163 to 67165		41552 to 41554					
1985	CO above GR Seine	71	FWS/GJ-85L-057 to 061,	13045 to 13075	CANY-00326	41555 to 41585				
			064,	13083 to 13085		41586 to 41588				
			112, 114 to 115,	13314 to 13319		41589 to 41594				
			168 to 170,	13526 to 13537		41595 to 41606				
			214,	13687 to 13690		41607 to 41610				
			222,	13719 to 13721		41611 to 41613				
			224 to 226,	13727 to 13736		41614 to 41623				
			233	13761 to 13762		41624 to 41625				
			1985	CO above GR Seine		63	FWS/GJ-85Y-002, 005,	41835, 41842, 41843	CANY-00326	41626 to 41628
							007 to 008,	41844, 41821, 41845		41629 to 41631
							011,	41852 to 41853		41632 to 41633
							016,	41863 to 41866		41634 to 41637
030,	41908 to 41909	41638 to 41639								
037, 043,	41931, 41946	41640, 41641								
049,	41962 to 41966	41642 to 41646								
072,	42014 to 42016	41647 to 41649								
078, 081,	42031, 41032, 42035	41650 to 41652								
083,	42039 to 42041,	41653 to 41655								
090, 097,	42053, 42067, 42068	41656 to 41658								
226,	42274	41659								
230 to 232,	42281 to 42287	41660 to 41666								
239,	42313 to 42316	41667 to 41670								
247,	42334 to 42337	41671 to 41674								
250,	42343 to 42344	41675 to 41676								
251,	42346 to 42349	41677 to 41680								
269,	42414, 42415, 46336	41681 to 41683								
270	42416 to 424419,	41684 to 41687								
	46338	41688								

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	CANY Catalog #s
	GR Drift net	1	DRI-85DRI-002	67054	CANY-00326	41689
	GR Seine	22	ERI-85SEI-020 to 025, 053 to 061	67078 to 67086 67128 to 67140	CANY-00326	41690 to 41698 41699 to 41711
		5	FWS/GJ-85L-063	13078 to 13082	CANY-00326	41712 to 41716
1986	GR Seine	3	FWS/V-86SN-099, 116	46917, 16918, 46959	CANY-00326	41717 to 41719
1987	CO below GR Seine	139	BIOWEST-87-002, 003, 006 to 013, 017, 018, 032 to 050, 058, 073 to 087, 091 to 097, 110, 111, 121	68244 to 68247 68250 to 68268 68272 to 68274 68300 to 68360 68379 to 68381 68402 to 68440 68453 to 68459 68473, 68474 68484	CANY-00326	41720 to 41723 41724 to 41742 41743 to 41745 41746 to 41806 41807 to 41809 41810 to 41848 41849 to 41855 41856, 41857 41858
	CO below GR Drift net	15	BIOWEST-87-055, 056 067 to 070, 114 to 120	68376, 68377 68390 to 68393 68475 to 68483	CANY-00326	41859, 41860 41861 to 41864 41865 to 41873
	GR Seine	59	BIOWEST-87-001, 004 to 005, 014 to 016, 020 to 031,  059 to 066, 071 to 072, 099 to 109	68243, 68248, 68249 68269 to 68271 68277 to 68299, 68485 68382 to 68389 68394 to 68401 68462 to 68472, 68488, 68489	CANY-00326	41874 to 41876 41877 to 41879 41880 to 41902 41903 41904 to 41911 41912 to 41919 41920 to 41930 41931, 41932
		237	FWS/V-87SN-263 to 270,  287 to 305,  551, 552, 554, 561, 804 to 824  842 to 849,  1044 to 1048,  1067, 1071 to 1073, 1077, 1082 to 1091, 1217, 1231 to 1233, 1267 to 1268, 1294, 1300 to 1305,  1307 to 1314,	48883 to 48901, 48906, 48907, 48912 to 48915, 48921 to 48923, 51081 48902 to 48905, 49036 to 49094, 51090 to 51092 48908 to 48911 48916 to 48920 51111 49034, 49035 51507 to 51515, 59907 to 59933, 60047 to 60049 51527 to 51529, 59967 to 59977 50136 to 50148, 50231, 51567 50232 50226 to 50230 50279 to 50301 51222 51262 to 51264 51374 to 51379 51462 51464 to 51471, 51568, 51569, 51624 51555, 51556, 51572 to 51580	CANY-00326	41933 to 41951 41952, 41953 41954 to 41957 41958 to 41960 41961 41962 to 41965 41966 to 42024 42025 to 42027 42028 to 42031 42032 to 42036 42037 42038, 42039 42040 to 42048 42049 to 42075 42076 to 42078 42079 to 42081 42082 to 42092 42093 to 42105 42106, 42107 42108 42109 to 42113 42114 to 42136 42137 42138 to 42140 42141 to 42146 42147 42148 to 42155 42156 to 42158 42159, 42160 42161 to 42169
	CO or GR drift net	1	BIOWEST-87-057	68378	CANY-00326	42170
1988	CO above GR Seine	66	FWS/GJ-88L-210 to 215, 226 to 231, 242 to 247	11587 to 11613 11658 to 11681 11707 to 11718, 11720, 11726 to 11727	CANY-00326	42171 to 42197 42198 to 42221 42222 to 42233 42234 42235 to 42236

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	CANY Catalog #s
	GR Seine	14	FWS/V-88SN-019 to 022	47654 to 47660, 59409 to 59415	CANY-00326	42237 to 42243 42244 to 42250
1989	CO above GR Seine	90	FWS/GJ-89L-0010 to 0015, 0065 to 0070, 0150 to 0155, 0215 to 0220	8203 to 8226 8478 to 8508 8946 to 8961 9179 to 9197	CANY-00326 CANY-00234 CANY-00235 CANY-00236	42251 to 42274 40987 to 41017 41018 to 41033 41034 to 41052
		86	UDWR-89Y-9095 to 9113, 9115 to 9122	67610 to 67667 67668 to 67695	CANY-00326	42275 to 42332 42333 to 42360
	GR Seine	20	UDWR-89Y-9059, 9063, 9067, 9071, 9075, 9083, 9091	67590 to 67597 67598 to 67609	CANY-00233	42361 to 42368 42369 to 42380
1990	CO above GR Seine	140	FWS/GJ-90L-0017 to 0022, 0073 to 0078,  0136 to 0141, 0199 to 0204, 0245 to 0251	4077 to 4102 4411 to 4446, 5560 to 5561 4807 to 4835 5150 to 5172 5337 to 5360	CANY-00326	42381 to 42406 42407 to 42442 42443 to 42444 42445 to 42473 42474 to 42496 42497 to 42520
		39	FWS/GJ-90Y-YC57 to 58, 61 to 62, 67 to 68, 71 to 76	149 to 156 157 to 187	CANY-00326	42521 to 42528 42529 to 42559
1991	CO above GR Seine	100	FWS/GJ-91L-030 to 035, 092 to 097, 158 to 163, 220 to 225	2866 to 2886 3189 to 3221 3582 to 3607 3881 to 3900	CANY-00326	42560 to 42580 42581 to 42613 42614 to 42639 42640 to 42659
		32	FWS/GJ-91S-YC08,10,13 to 22	433 to 464	CANY-00326	42660 to 42691
		63	FWS/GJ-91Y-IC50 to 67	1232 to 1294	CANY-00326	42692 to 42754
	GR Seine	3	FWS/GJ-91Y-YG65	852 to 854	CANY-00326	42755 to 42757
1992	CO above GR Seine	127	FWS/GJ-92L-030 to 035, 085 to 090, 158 to 163, 220 to 225	9602 to 9623 9963 to 10008 10441 to 10479 10727 to 10746	CANY-00326	42758 to 42779 42780 to 42825 42826 to 42864 42865 to 42884
		62	FWS/GJ-92S-YC02 to 13, 16 to 20, 22 to 24	1666 to 1704 1705 to 1727	CANY-00326	42885 to 42923 42924 to 42946
		47	FWS/GJ-92Y-9251 to 9262	2000 to 2046	CANY-00326	42947 to 42993
1993	CO above GR Seine	89	FWS/GJ-93L-012, 014 to 017, 075 to 080, 139 to 144, 205 to 210	19897 to 19913 20202 to 20221 20551 to 20575 20928 to 20954	CANY-00326	42994 to 43010 43011 to 43030 43031 to 43055 43056 to 43082
		56	FWS/GJ-93S-YC01 to 16	2573 to 2628	CANY-00326	43083 to 43138
		117	FWS/GJ-93Y-YC55 to 76	6312 to 6428	CANY-00326	43139 to 43255
	GR Light trap	68	NPS-93RZ-002 to 003, 005 to 009, 011 to 019, 021 to 029	27186 to 27197 27198 to 27238 27239 to 27253	CANY-00326	43256 to 43267 43268 to 43308 43309 to 43323
	GR Seine	8	FWS/GJ-93Y-GR73, GRX1	6448 to 6455	CANY-00326	43324 to 43331
		7	NPS-93RZ-084 to 085	27509 to 27515	CANY-00326	43332 to 43338
1994	CO above GR Seine	78	FWS/GJ-94L-058 to 063,  121 to 126, 186 to 191, 250 to 255	23900 to 23923, 24734, 24735 24190 to 24207 24469 to 24484 24707 to 24724	CANY-00326	43339 to 43362 43363, 43364 43365 to 43382 43383 to 43398 43399 to 43416
		68	FWS/GJ-94S-01 to 09, 11 to 12, 14 to 16, 18 to 19, 20,  21 to 22	7949 to 7981 7982 to 7992 7993 to 8001 8002 to 8006 8007 to 8009, 8178 8010 to 8015	CANY-00326	43417 to 43449 43450 to 43460 43461 to 43469 43470 to 43474 43475 to 43477 43478 43479 to 43484

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	CANY Catalog #s
		84	FWS/GJ-94Y-CO65 to 66, 67, 68 to 88	21641 to 21648 21649 to 21651, 21801 21652 to 21723	CANY-00326	43485 to 43492 43493 to 43495 43496 43497 to 43568
	CO above GR Light trap/seine	37	NPS-94RZLCLT-32 to 41	45499 to 45521, 45526 to 45528, 47590 to 47595, 47599 to 47603	CANY-00326	43569 to 43591 43592 to 43594 43595 to 43600 43601 to 43605
	GR Drift net	1	NPS -94RZLGPT001	45333	CANY-00326	43606
	GR Light trap	13	NPS-94LGRZLTC02, 11	47614 to 47626	CANY-00326	43607 to 43619
		20	NPS-94RZLGLT002,004 to 018	45253 to 45272	CANY-00326	43620 to 43639
	GR Seine	33	FWS/GJ-94Y-YG60, 64, 68, 72, 76, 80, 84, 88, 92	21768 to 21778 21779 to 21800	CANY-00326	43640 to 43650 43651 to 43672
		12	NPS-RZLGSN010, 019	45273 to 45277, 47550 to 47556	CANY-00326	43673 to 43677 43678 to 43684
1995	CO above GR Seine	3	FWS/GJ-95S-LC01	24741 to 24743	CANY-00326	43685 to 43687
		115	FWS/GJ-95Y-YC65 to 76, 78 to 79, 81 to 88	28817 to 28882 28883 to 28931	CANY-00326	43688 to 43753 43754 to 43802
	GR Light trap	65	NPS-95RZLGLT001 to 006, 011 to 012, 016 to 017 018 to 020, 021, 022, 024, 028, 042 to 049	44824 to 44834 44835 to 44844 45328 to 45331 44845 to 44861 44862 to 44883, 44959	CANY-00326	43803 to 43813 43814 to 43823 43824 to 43827 43828 to 43844 43845 to 43866 43867
		8	UDWR-95MCLT01 to 02, 04 to 06, 08 to 09	44917 to 44918 44919 to 44924	CANY-00326	43868 to 43869 43870 to 43875
	GR Seine	64	FWS/GJ-95Y-GR59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91	28458 to 28472 28473 to 28496 28497 to 28515	CANY-00326	43876 to 43890 43891 to 43914 43915 to 43933
		4	NPS-95RZLGS-009, 015	45324 to 45327	CANY-00326	43934 to 43937
	GR (seine?)	1	Z24870	24870	CANY-00326	43938
1996	CO above GR Seine	54	FWS/GJ-96S-LC02, 04 to 18, 21 to 22	30529 to 30579 30580 to 30582	CANY-00326	43939 to 43989 43990 to 43992
		29	FWS/GJ-96Y-YC65, 69, 73, 78, 81, 83	30955 to 30975 30976 to 30983	CANY-00326	43993 to 44013 44014 to 44021
	GR Drift net	5	UDWR-96BBL02, 0403, 06	44006 to 44010	CANY-00326	44022 to 44026
		57	UDWR-96MCL21 to 32, 33, 36, 38, 41 to 42, 48 to 49, 51 to 55, 57, 60, 62 to 63	44147 to 44174 44539, 44175, 44176 44177 to 44183 44184 to 44202	CANY-00326	44027 to 44054 44055 to 44057 44058 to 44064 44065 to 44083
		66	UDWR-AB9604 to 10, 12, 21, 24, 29, 30, 32, 46 to 54	44203 to 44230 44231 to 44243 44244 to 44265, 44543, 44549, 44550	CANY-00326	44084 to 44111 44112 to 44124 44125 to 44146 44147 to 44149
		15	UDWR-ABL9613 to 17	44266 to 44280	CANY-00326	44150 to 44164
		13	UDWR-HC9605, 09 to 11, 28 to 29, 32	44285 to 44290 44291 to 44297	CANY-00326	44165 to 44170 44171 to 44177
		2	UDWR-HCL9613, 14	44298 to 44299	CANY-00326	44178 to 44179
		53	UDWR-MC9601 to 11, 13 to 20	44300 to 44324, 44554 44325 to 44350, 44555	CANY-00326	44180 to 44204 44205 44206 to 44231 44232
	GR Seine	37	FWS/GJ-96Y-YG61, 65, 69, 73, 77, 81, 85, 89, 93, 97	31048 to 31063 31064 to 31084	CANY-00326	44233 to 44248 44249 to 44269



Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	CANY Catalog #s		
1997	CO above GR Seine GR Drift net	13	UDWR-96ABS17 to ABS19, BBS01, BBS01C,  MCS07, MCS09B	43510 to 43514 43515 to 43517, 43640 43562 to 43565	CANY-00326	44270 to 44274 44275 to 44277 44278 44279 to 44282		
		35	UDWR-ABS9601, 03 to 010,  015 to 016	43566 to 43589, 43641 43590 to 43599	CANY-00326	44283 to 44306 44307 44308 to 44317		
		2	UDWR-BBS9603 to 04	43601 to 43602	CANY-00326	44318 to 44319		
		2	UDWR-MCS9605	43610 to 43611	CANY-00326	44320 to 44321		
		14	FWS/GJ-97Y-YC67, 71, 83	41806 to 41819	CANY-00326	44322 to 44335		
		46	UDWR-AB97L001, 003 to 010, 012, 020, 022 to 026, 028, 030, 033, 034,038 to 040,048, 065, 070, 074	45591 to 45602 45603 to 45616 45587 to 45589 45617 to 45629 71148 to 71150 45630	CANY-00326	44336 to 44347 44348 to 44361 44362 to 44364 44365 to 44377 44378 to 44380 44381		
		55	UDWR-MC97L001 to 007, 009 to 012, 014, 016, 019 to 022, 026, 027, 029, 033, 035, 036, 042, 043, 047, 051, 066, 070, 078,	45908 to 45920 45921 to 45931 45932 to 45942 45943 to 45952 45490 to 45493 45953 to 45955 71151 to 71152 45956	CANY-00326	44382 to 44394 44395 to 44405 44406 to 44416 44417 to 44426 44427 to 44430 44431 to 44433 44434 to 44435 44436		
		GR Seine	43	UDWR-MC97S001 to 004, 009 to 013, 015, 017 to 020	45995 to 46008 46009 to 46037	CANY-00326	44437 to 44450 44451 to 44479	
		1998	CO above GR Seine GR Drift net	23	FWS/GJ-98Y-YC55, 59, 61, 63, 64, 68	50876 to 50881 50954 to 50970	CANY-00326	44480 to 44485 44486 to 44502
				50	UDWR-ABL98002 to 003, 011, 021, 022, 031, 032, 034, 035, 037, 039, 040, 043, 046, 053, 057, 063, 072, 076, 078 to 080, 082, 084, 086, 094, 099, 104, 106, 112	52014 to 52017 52018 to 52027 52028 to 52036 52037 to 52044 52045 to 52052 52053 to 52060 52061 to 52063	CANY-00326	44503 to 44506 44507 to 44516 44517 to 44525 44526 to 44533 44534 to 44541 44542 to 44549 44550 to 44552
90	UDWR-MCL98008, 014, 022, 026, 030, 033, 036, 041, 042, 044, 050, 051, 058, 059, 061, 064 to 070, 072 to 081, 088, 089, 095, 096, 098,101 to 104			52192 to 52195 52196 to 52204 52205 to 52212 52213 to 52233 52234 to 52261 52262 to 52281	CANY-00326	44553 to 44556 44557 to 44565 44566 to 44573 44574 to 44594 44595 to 44622 44623 to 44642		
GR Seine	19			FWS/GJ-98Y-YG59,71,75,91,92	50926 to 50944	CANY-00326	44643 to 44661	
2	UDWR-ABS98003, 009			52064 to 52065	CANY-00326	44662 to 44663		
2	UDWR-MCS98004, 007			52282 to 52283	CANY-00326	44664 to 44665		
1999	CO above GR Seine GR Drift net			26	FWS/GJ-99Y-YC57, 61 to 63, 66, 70	59628 to 59646 59647 to 59652, 59694	CANY-00326	44666 to 44684 44685 to 44690 44691
				70	UDWR-ABL99001 to 004, 006 to 010 011, 013 to 021, 023, 025 to 030, 032 to 034, 036 to 039, 044 to 045	70561 to 70569 70571 to 70582 70584 to 70603 70605 to 70619 70620 to 70631 70633, 70634	CANY-00326	44692 to 44700 44701 to 44712 44713 to 44732 44733 to 44747 44748 to 44759 44760, 44761

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	CANY Catalog #s
		38	UDWR-HCL99001, 002 to 007, 009 012 to 014, 021, 022 to 023, 028 to 033, 035 to 038	70793, 70795 to 70802 70804 to 70805 70807 to 70811 70813 to 70814 70816 to 70821 70827 to 70834 70836 to 70841	CANY-00326	44762 44763 to 44770 44771 to 44772 44773 to 44777 44778 to 44779 44780 to 44785 44786 to 44793 44794 to 44799
		84	UDWR-MCL99002, 004, 005, 006, 008 to 010 011 to 012 013, 015, 016, 018, 019, 021, 023 to 027, 028 to 031, 033, 035 to 042, 044 to 047, 058, 060, 066,067, 069, 071, 072, 074	70842 to 70844 70846, 70847 70849, 70851 70852 to 70856 70858 to 70862 70845, 70848, 70850, 70857 70863 to 70865 70875 70866 to 70874 70876 to 70884 70885 to 70903 70906 to 70914 70925, 70926 70928 70931 to 70933 70935 70937 to 70942	CANY-00326	44800 to 44802 44803, 44804 44805, 44806 44807 to 44811 44812 to 44816 44817, 44818 44819, 44820 44821 to 44823 44824 44825 to 44833 44834 to 44842 44843 to 44861 44862 to 44870 44871, 44872 44873 44874 to 44876 44877 44878 to 44883
	GR Seine	14	FWS/GJ-99Y-YG54, 60, 67	59680 to 59693	CANY-00326	44884 to 44897
2000	CO above GR Seine	27	FWS/GJ-00Y-YC48, 52, 56, 59, 62, 64	72499 to 72517 72518 to 71525	CANY-00326	44898 to 44916 44917 to 44924
	GR Seine	10	FWS?GJ-00YG48, 53, 71	72538 to 72547	CANY-00326	44925 to 44934
2001	CO above GR Seine	18	FWS/GJ-01Y-CO23, 29, 33, 35	79441 to 79458	CANY-00326	44935 to 44952
	GR Seine	32	FWS/GJ-01Y-GR41, 43, 46, 49, 53, 57, 59, 63, 67	79389 to 79401 79402 to 79420	CANY-00326	44953 to 44965 44966 to 44984

**Appendix II**

**Larval Fish Laboratory Collection–National Park Service Holdings  
From Dinosaur National Monument (DINO)**

(Note: each LFL Collection and NPS catalog number represents either a single specimen or a discrete lot of fish, which normally consists of all specimens of a single taxon from a single collection or source.)

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**ANCS+ import file of holdings submitted as an Excel spreadsheet.**

DINOallforNPSimportfile.xls

**Associated Access database of selected fields extracted from LFL's Specify catalog.**

LFL Collection DINO-all.mdb

**Summary of holdings by river reach.**

Green River (GR) kilometers 512.7 to 587.3 (river miles 318.6 to 364.95) above confluence with Colorado River:  
6,758 cataloged lots, 222,860 specimens, from 1,488 collections, 21 July 1981 to 24 September 2004, river kilometers 513.4 to 586.4—includes one collection (FWS/V-86SN-041) with 1 lot of 7 specimens for which river kilometer was not recorded.

Yampa River (YA) kilometers 0 to 75.5 (river miles 0 to 46.9) above confluence with Green River:  
14,532 cataloged lots, 169,305 specimens, from 4,482 collections, 19 August 1980 to 12 August 2004, river kilometers 0.0 to 74.7.

Total:  
21,290 cataloged lots, 392,165 specimens, from 5,970 collections, 19 August 1980 to 24 September 2004.

## Number of cataloged specimens by taxon in LFL Collection from NPS-DINO.

Taxon <sup>a</sup>	No. of Specimens	Size Range (mm TL)	No. of lots
<i>Cyprinella lutrensis</i>	130,728	<5 -150	1,808
<i>Cyprinus carpio</i>	1,085	4 -150	161
<i>Gila cypha</i>	34	17 -50	24
<i>Gila robusta</i>	10,833	<10 -252	502
<i>Gila</i> sp.	25,911	<10 -160	1,847
<i>Notropis stramineus</i>	62,364	<5 -150	1,474
<i>Pimephales promelas</i>	25,691	<5 -150	916
<i>Ptychocheilus lucius</i>	10,906	<10 -64	1,756
<i>Rhinichthys osculus</i>	35,336	<10 -150	3,511
<i>Richardsonius balteatus</i>	8,830	<5 -150	544
<i>Semotilus atromaculatus</i>	10	21 -100	10
Cyprinidae sp.	3,444	<5 -21	886
<i>Catostomus ardens</i>	7	20 -21	7
<i>Catostomus catostomus</i>	8	12 -16	2
<i>Catostomus commersonii</i>	6,914	9 -193	666
<i>Catostomus commersonii</i> x <i>discobolus</i> <sup>b</sup>	30	33 -67	10
<i>Catostomus commersonii</i> x <i>latipinnis</i> <sup>b</sup>	203	17 -174	72
<i>Catostomus discobolus</i>	41,472	<10 -150	3,151
<i>Catostomus discobolus</i> x <i>latipinnis</i> <sup>b</sup>	25	22 -36	8
<i>Catostomus discobolus</i> x sp.	1	56	1
<i>Catostomus latipinnis</i>	19,848	<10 -150	2,213
<i>Catostomus</i> sp.	32	6 -15	10
<i>Xyrauchen texanus</i>	25	8 -17	21
Catostomidae sp.	1,223	<10 -57	202
<i>Ameiurus melas</i>	24	27 -80	11
<i>Ictalurus punctatus</i>	4,066	<10 -130	665
<i>Esox lucius</i>	2	191 -	2
<i>Prosopium williamsoni</i>	482	25 -110	32
<i>Salmo trutta</i>	1		1
<i>Fundulus zebrinus</i>	18	15 -45	7
<i>Culaea inconstans</i>	14	21 -41	14
<i>Cottus bairdii</i>	142	<10 -112	61
<i>Lepomis cyanellus</i>	1,280	<5 -125	178
<i>Lepomis macrochirus</i>	3	60 -62	2
<i>Lepomis</i> sp.	8	5 -	8
<i>Micropterus dolomieu</i>	505	6 -187	126
<i>Micropterus salmoides</i>	4		4
<i>Pomoxis nigromaculatus</i>	1	11 -20	1
<i>Pomoxis</i> sp.	9		9
Centrarchidae sp.	2		2
Actinopterygii sp. <sup>c</sup>	644	<5 -50	365
Totals	392,165	<5 -252	21,290

<sup>a</sup> As indicated in the LFL Collection catalog database, the identity of some specimens in many taxa is questionable.

<sup>b</sup> In the LFL Collection catalog database, some hybrid specimens are designated with species names reversed.

<sup>c</sup> Specimens unidentified even to family either because of damage or incomplete processing (e.g., only endangered species identified and segregated from the rest of the collection).

**Number of cataloged specimens by taxon in LFL Collection from NPS-DINO by NPS accession number for numbers DINO-00277 through 00337.**

NPS-Accession Number, DINO- Taxon <sup>a</sup> / Years	00277 1990	00300 1991	00317 1992	00326 1993	00331 1994	00337 1995
<i>Cyprinella lutrensis</i>	407	80	439	787	8,095	10,999
<i>Cyprinus carpio</i>		1	1	4	14	536
<i>Gila cypha</i>			2			
<i>Gila robusta</i>				5	65	65
<i>Gila</i> sp.	116	107	217	246	21	1,180
<i>Notropis stramineus</i>	171	61	273	302	1,723	2,654
<i>Pimephales promelas</i>	26	9	195	62	2,657	2,400
<i>Ptychocheilus lucius</i>	1,151	426	1,016	694	284	96
<i>Rhinichthys osculus</i>	786	448	865	553	3,282	3,277
<i>Richardsonius balteatus</i>	15	21	3	6	1,090	588
<i>Semotilus atromaculatus</i>			1			
Cyprinidae sp.	211	160	172	39	299	27
<i>Catostomus ardens</i>						1
<i>Catostomus catostomus</i>					8	
<i>Catostomus commersonii</i>	1	1	5	4	565	467
<i>Catostomus commersonii</i> x <i>discobolus</i> <sup>b</sup>					20	
<i>Catostomus commersonii</i> x <i>latipinnis</i> <sup>b</sup>					7	3
<i>Catostomus discobolus</i>	966	316	966	2,714	2,289	10,134
<i>Catostomus discobolus</i> x <i>latipinnis</i> <sup>b</sup>					17	3
<i>Catostomus discobolus</i> x sp.						
<i>Catostomus latipinnis</i>	179	54	102	347	3,860	2,174
<i>Catostomus</i> sp.						
<i>Xyrauchen texanus</i>				6		9
Catostomidae sp.					86	66
<i>Ameiurus melas</i>					43	1
<i>Ictalurus punctatus</i>	45	59	218	53	144	
<i>Esox lucius</i>						1
<i>Prosopium williamsoni</i>						7
<i>Salmo trutta</i>					1	
<i>Fundulus zebrinus</i>						1
<i>Culaea inconstans</i>						
<i>Cottus bairdii</i>						5
<i>Lepomis cyanellus</i>	1				15	96
<i>Lepomis macrochirus</i>						
<i>Lepomis</i> sp.					7	
<i>Micropterus dolomieu</i>	2					2
<i>Micropterus salmoides</i>				1		1
<i>Pomoxis nigromaculatus</i>						
<i>Pomoxis</i> sp.						
Centrarchidae sp.						
Actinopterygii sp. <sup>c</sup>		17	1	11	17	80
Totals	4,077	1,760	4,476	5,834	24,609	34,873

<sup>a</sup> As indicated in the LFL Collection catalog database, the identity of some specimens in many taxa is questionable.

<sup>b</sup> In the LFL Collection catalog database, some hybrid specimens are designated with species names reversed.

<sup>c</sup> Specimens unidentified even to family either because of damage or incomplete processing (e.g., only endangered species identified and segregated from the rest of the collection).

**Number of cataloged specimens by taxon in LFL Collection from NPS-DINO by NPS accession number for numbers DINO-00353 through 00422.**

NPS-Accession Number, DINO- Taxon <sup>a</sup> / Years	00353 1996-00	00362 2001	00368 2002-04GR	00369 2002-04YA	00422 1981-88
<i>Cyprinella lutrensis</i>	489	57	85,034	872	23,469
<i>Cyprinus carpio</i>	5	1	405	8	110
<i>Gila cypha</i>	1				31
<i>Gila robusta</i>	3		13		10,682
<i>Gila</i> sp.	1,426	37	326	236	21,999
<i>Notropis stramineus</i>	431	33	50,799	1,406	4,511
<i>Pimephales promelas</i>	30	1	12,887	34	7,390
<i>Ptychocheilus lucius</i>	4,051	822	15	672	1,679
<i>Rhinichthys osculus</i>	3,693	797	1,762	562	19,311
<i>Richardsonius balteatus</i>	51	10	5,480	23	1,543
<i>Semotilus atromaculatus</i>	1		4		4
Cyprinidae sp.	304	141	75	1,950	66
<i>Catostomus ardens</i>	3	3			
<i>Catostomus catostomus</i>					
<i>Catostomus commersonii</i>	1,092	28	4,566	56	129
<i>Catostomus commersonii</i> x <i>discobolus</i> <sup>b</sup>			9	1	
<i>Catostomus commersonii</i> x <i>latipinnis</i> <sup>b</sup>			189	3	1
<i>Catostomus discobolus</i>	6,744	342	2,388	1,395	13,218
<i>Catostomus discobolus</i> x <i>latipinnis</i> <sup>b</sup>			5		
<i>Catostomus discobolus</i> x sp.			1		
<i>Catostomus latipinnis</i>	3,661	156	5,490	807	3,018
<i>Catostomus</i> sp.				32	
<i>Xyrauchen texanus</i>	4		5	1	
Catostomidae sp.	74	14	33	6	944
<i>Ameiurus melas</i>			22	1	
<i>Ictalurus punctatus</i>	186	218	11	394	2,738
<i>Esox lucius</i>			1		
<i>Prosopium williamsoni</i>	1	1	473		
<i>Salmo trutta</i>					
<i>Fundulus zebrinus</i>			16	1	
<i>Culaea inconstans</i>	9		5		
<i>Cottus bairdii</i>	4		77		13
<i>Lepomis cyanellus</i>	5		1,073	82	8
<i>Lepomis macrochirus</i>			3		
<i>Lepomis</i> sp.	1				
<i>Micropterus dolomieu</i>	2		494	5	
<i>Micropterus salmoides</i>	2				
<i>Pomoxis nigromaculatus</i>					1
<i>Pomoxis</i> sp.	9				
Centrarchidae sp.	2				
Actinopterygii sp. <sup>c</sup>	16	8	199	204	91
Totals	22,300	2,669	171,860	8,751	110,956

<sup>a</sup> As indicated in the LFL Collection catalog database, the identity of some specimens in many taxa is questionable.

<sup>b</sup> In the LFL Collection catalog database, some hybrid specimens are designated with species names reversed.

<sup>c</sup> Specimens unidentified even to family either because of damage or incomplete processing (e.g., only endangered species identified and segregated from the rest of the collection).

## Tabulated list of DINO holdings by collection set with NPS accession and catalog numbers.

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
1980	YA Seine/dip net	348	COW-80Y-012 to 017,  027 to 089	55329 to 55357, 56045 to 56048, 56127 55393 to 55632, 55914 to 55916, 56021, 56055 to 56118, 56124, 56126, 56128, 66580 to 66582	DINO-00422	18210 to 18238 18239 to 18242 18243 18244 to 18483 18484 to 18486 18487 18488 to 18551 18552 to 18554 18555 to 18557
1981	YA Seine	25	COW-81LYABH002 to 006, 009 to 011, 015	17248 to 17262 17263 to 17272	DINO-00422	18558 to 18572 18573 to 18582
		232	COW-81LYAEW001, 002, 004, 005, 010, 011, 014, 019 to 023, 025 to 027, 031, 040, 045, 046, 050 to 052, 055 to 057, 059 to 062, 63A, 63B, 63C, 064 to 072, 72A, 073 to 083, 085 to 087 090 to 100, 102, 103, 108, 110 to 113, 116	17452 to 17458 17459 to 17477 17478 to 17509 17510 to 17518 17519 to 17533 17534 to 17550 17551 to 17580 17581 to 17625 17626 to 17660 17661 to 17683	DINO-00422	18583 to 18589 18590 to 18608 18609 to 18640 18641 to 18649 18650 to 18664 18665 to 18681 18682 to 18711 18712 to 18756 18757 to 18791 18792 to 18814
		7	COW-81LYAJH001 to 003	17928 to 17934	DINO-00422	18815 to 18821
		142	COW-81LYABH01A to 04A, 12A, 14A, 17A, 18A, 20A, 23A to 40A, 42A, 44A, 46A to 48A, 52A to 56A, 58A, 60A, 61A, 65A to 74A, 76A to 84A	17939 to 17954 17955 to 17960 17961 to 18005 18006 to 18013 18014 to 18033 18034 to 18050 18051 to 18080	DINO-00422	18822 to 18837 18838 to 18843 18844 to 18888 18889 to 18896 18897 to 18916 18917 to 18933 18934 to 18963
		403	COW-81Y-001 to 117	57227 to 57617, 57739, 57748, 57750 to 57752, 57754 to 57756, 66687 to 66690	DINO-00422	18964 to 19354 19355, 19356 19357 to 19359 19360 to 19362 19363 to 19366
	GR Seine/dip net	131	FWS/V-81L-GR001 to 003, 005 to 021, 023, 024, 025,  026, 027, 029, 030, 032, 034 to 042	16413 to 16426 16427 to 16499 16500 to 16502, 16938 16503 to 16514 16515 to 16542	DINO-00422	19367 to 19380 19381 to 19453 19454 to 19456 19457 19458 to 19469 19470 to 19497
1982	YA Seine	160	FWS/V-82L-YA002 to 004, 006 to 008, 011 to 013, 016 to 020, 021, 113 to 114, 116 to 135, 223, 225, 227, 229	19110 to 19113 19114 to 19120 19121 to 19127 19257 19128 to 19256 19095 to 19106	DINO-00422	19498 to 19501 19502 to 19508 19509 to 19515 19516 19517 to 19645 19646 to 19657

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
	YA Seine/dip net	1416	CDOW-82Y-001, 002, 006 007 to 014, 016 to 025, 063 to 099, 105 to 167, 184 to 324, 325 to 372, 379 to 395, 399 to 425, 499 to 519, 522 to 528, 529 to 537, 602, 603	60052 to 60058, 60069 to 60075 60084 to 60171, 61457 60796 to 60927, 63402, 66707 61460 to 61661, 62220, 62221, 63403, 66708, 66709 61722 to 62219, 63406 to 63408 62258 to 62439 62458 to 62505, 63404 62509 to 62605, 63405 62940 to 63015, 63413 63021 to 63046 63048 to 63070 63384 to 63399	DINO-00422	19658 to 19664 19665 to 19671 19672 to 19759 19760 19761 to 19892 19893, 19894 19895 to 20096 20097 to 20099 20100, 20101 20102 to 20599 20600 to 20602 20603 to 20784 20785 to 20832 20833 20834 to 20930 20931 20932 to 21007 21008 21009 to 21034 21035 to 21057 21058 to 21073
	YA Drift net	30	CDOW-82Y-373, 377, 378, 396 to 398, 426, 497, 498, 520, 521, 604, 605	62440 62449 to 62457 62506 to 62508 62606, 62607 62932 to 62939 63016 to 63020 63400, 634001	DINO-00422	21074 21075 to 21083 21084 to 21086 21087, 21088 21089 to 21096 21097 to 21101 21102, 21103
	YA (unrecorded gear)	5	CDOW-82Y-037 to 039, 040	60191 to 60193 60194, 61458	DINO-00422	21104 to 21106 21107, 21108
	GR Seine	27	CDOW-82G-026 to 035, 041 to 043, 100 to 104, 168, 169	60172 to 60187 60195 to 60197 60928 to 60933 61662, 61663	DINO-00422	21109 to 21124 21125 to 21127 21128 to 21133 21134, 21135
		8	CDOW-82Y-374 to 376	62441 to 62448	DINO-00422	21136 to 21143
		49	FWS/V-82L-GR136-150, 153, 154, 156 to 158	18702 to 18742 18743 to 18750	DINO-00422	21144 to 21184 21185 to 21192
	GR (Echo Park) Larval trap	14	FWS/V-82L-GR025, 026, 030, 034, 035, 040, 042 to 044	18668 to 18670 18671 to 18681	DINO-00422	21193 to 21195 21196 to 21206
1983	YA Seine	72	FWS/V-83L-YA08 to 24	19793 to 19864	DINO-00422	21207 to 21278
		614	CDOW-83Y-001 to 007, 009 010 to 017, 019, 020, 025, 042, 043, 048, 049, 087 to 094, 112, 126 to 131, 144, 146 to 167, 169, 182 to 185,  186, 188 to 207, 208,	63536 to 63559 63562, 651349 63563 to 63585 63587 to 63592 63597 to 63599 64168 to 64173 64175, 64176 64186 to 64206 64212 to 64214 64231 to 64255 64257 to 64377 64395 to 64409, 64683 64410 to 64477 64684, 64685	DINO-00422	21279 to 21302 21303, 21304 21305 to 21327 21328 to 21333 21334 to 21336 21337 to 21342 21343, 21344 21345 to 21365 21366 to 21368 21369 to 21393 21394 to 21514 21515 to 21529 21530 21531 to 21598 21599, 21600



Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
			209,	64478 to 64480, 64686		21601 to 21603 21604
			210 to 212, 214 to 218, 219,	64481 to 64510 64511, 65138		21605 to 21634 21635, 21636
			220 to 237,	64512 to 64565		21637 to 21690
			344 to 348,	64773 to 64779		21691 to 21697
			349,	63749, 64780		21698 to 21699
			350,	64781 to 64783		21700 to 21702
			363 to 399,	64809 to 64929		21703 to 21823
			412 to 418,	64964 to 65001		21824 to 21861
			439 to 442,	65111 to 65136		21862 to 21887
			445,	65293		21888
			COMB03, COMB04, COMB06, COMB07	67354, 67355 76357, 67358		21889, 21890 21891, 21892
	YA Seine/drift net	5	CDOW-83Y- COMB01, 02, 05, 08, 09	67352, 67353, 67356 67359, 67360	DINO-00422	21893, 21894 21895 21896, 21897
	YA (Harding Hole) Dip net	8	CDOW-83Y-443, 444	65150 to 65157	DINO-00422	21898 to 21905
	YA (Echo Park/ Harding Hole) Drift	306	CDOW-83Y-008, 018, 021, 022 to 024, 029, 068, 074, 075, 080, 082, 095,102, 103, 107, 115, 121, 135, 170 to 171, 173, 176 to 181, 238 to 249, 251 to 253, 255 to 286, 288, 290 to 297, 298, 300, 302 to 310, 312, 314, 315, 316 to 319, 321, 322, 324 to 342, 351 to 362 400 to 411	63560 to 63561 63586, 65291 63593, 65292 63594 to 63596, 64167 64177 to 64185 64207 to 64211 64215, 64256 64378 to 64382 64383 to 64394 64566 to 64587 64588 to 64660 64661 to 64682 64687 to 64709 64710 to 64713 64714, 65137 64715 to 64725 64726 to 64772 64784 to 64808 64930 to 64963	DINO-00422	21906 to 21907 21908, 21909 21910, 21911 21912 to 21914, 21915 21916 to 21924 21925 to 21929 21930, 21931 21932 to 21936 21937 to 21948 21949 to 21970 21971 to 22043 22044 to 22065 22066 to 22088 22089 to 22092 22093, 22094 22095 to 22105 22106 to 22152 22153 to 22177 22178 to 22211
1984	YA Seine	513	CDOW-84Y-054 to 182	65606 to 66111, 67038 to 67044	DINO-00422	22212 to 22717 22718 to 22724
	YA (Echo Park) Drift	184	CDOW-84Y-001 to 038 040 to 046, 048 to 053, 183 to 243, 245 to 256	65520 to 65588 65589 to 65596 65597 to 65605 66112 to 66193, 67045 to 67046 66194 to 66207	DINO-00422	22725 to 22793 22794 to 22801 22802 to 22810 22811 to 22892 22893 to 22894 22895 to 22908
	GR Seine	2	CDOW-84G-UNK	67033, 67034	DINO-00422	22909, 22910
		41	FWS/V-84L-GRC01 to 05, 08, 84 to 86	19461 to 19485 19493 to 19500 19727 to 19734	DINO-00422	22911 to 22935 22936 to 22943 22944 to 22951

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
	GR (Whirlpool) Drift	223	COW-84G-001 to 009, 010 to 028, 029 to 039, 040 to 048, 049, 050 to 096, 097, 098, 099 to 109	65301 to 65319, 67167 65320 to 65358, 67035 65359 to 65379, 67036 65380 to 65400 67037 65401 to 65493, 65517, 65518 65494 to 65496 65300, 65497, 65519 65498 to 65515	DINO-00422	22952 to 22970 22971 22972 to 23010 23011 23012 to 23032 23033 23034 to 23054 23055 23056 to 23148 23149, 23150 23151 to 23153 23154 to 23156 23157 to 23174
1985	YA (Echo Park/below Harding Hole) Seine	121	FWS/V-85L-YA001 to 017, 140 to 145	18081 to 18172 18173 to 18201	DINO-00422	23175 to 23266 23267 to 23295
	YA (Echo Park) Drift	363	COW-85Y-001 to 089, 091 to 163, xxx	66208 to 66396 66397 to 66570	DINO-00422	23296 to 23484 23485 to 23658
	GR Seine	87	FWS/V-85L-GR018 to 020, 035 to 049	18202 to 18218 18296 to 18365	DINO-00422	23659 to 23675 23676 to 23745
1986	YA Seine	118	FWS/V-86SN-001 to 003, 007 to 010, 016 to 020, 033 to 035, 042 to 046, 082 to 085	46543 to 46557 46573 to 46586 46605 to 46637 46688 to 46701 46728 to 46750 46856 to 46874	DINO-00422	23746 to 23760 23761 to 23774 23775 to 23807 23808 to 23821 23822 to 23844 23845 to 23863
	YA (Echo Park) Drift	99	FWS/V-86DR-001 to 028, 030 to 047, 049 to 053, 057 to 059, 063	46404 to 46463 46464 to 46498 46499 to 46502	DINO-00422	23864 to 239232 23924 to 23958 23959 to 23962
		321	COW-86Y-001 to 009, 011, 012, 015 to 017, 019, 022, 024, 025, 027 to 029, 031, 032, 035, 038, 043, 048 to 050, 053 to 064, 066, 067, 069A, 069B, 070 to 078, 080, 081, 083, 085 to 087, 090 to 093, 095 to 098, 100, 101, 103 to 106, 109 to 116, 118, 119, 124 to 163, 165 to 193, 195, 196	66712 to 66725 66726 to 66730 66731 to 66735 66736 to 66740 66741 to 66743 66744 to 66767 66768 to 66774 66775 to 66792 66793 to 66798 66799 to 66810 66811 to 66819 66820 to 66832 66833 to 66948, 67032 66949 to 67031	DINO-00422	23693 to 23976 23977 to 23981 23982 to 23986 23987 to 23991 23992 to 23994 23995 to 24018 24019 to 24025 24026 to 24043 24044 to 24049 24050 to 24061 24062 to 24070 24071 to 24083 24084 to 24199 24200 24201 to 24283
	GR Seine	131	FWS/V-86SN-004 to 006, 011 to 015, 021 to 031, 039, 041, 047 to 048, 049, 072 to 076	46558 to 46572 46587 to 46604 46638 to 46687 46717 to 46726 46727 46751 to 46762 46764 to 46767 46817 to 46837	DINO-00422	24284 to 24298 24299 to 24316 24317 to 24366 24367 to 24376 24377 24378 to 24389 24390 to 24393 24394 to 24414
1987	YA (Echo Park, except D1) Seine	4	FWS/V-87SN-D1, D2	47691, 47692 47723, 47724	DINO-00422	24415, 24416 24417, 24418

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
		41	FWS/V-87SN-168, 179, 230, 231, 232, 271, 852,  1000, 1050	48180 to 48189 48723 to 48727 48855 to 48864 48879 to 48882 51474, 60051, 60005 to 60007 50090 to 50095 51473	DINO-00422	24419 to 24428 24429 to 24433 24434 to 24443 24444 to 24447 24448, 24452, 24449 to 24451 24453 to 24458 24459
	GR Seine	10	FWS/V-87SN-61, 64	51651 to 51660	DINO-00422	24460 to 24469
		219	FWS/V-87SN-001, 027 to 035, 063,  064, 065, 067 to 069, 169, 170,  171 to 173, 225, 235, 236, 272 to 277, 310 to 312, 313, 314, 315 to 320, 327, 328,  329 to 339, 346, 853 to 855, 898, 999,	47858 to 47863 49416 to 49442 49989, 49990, 51557 49991 to 50007 48321 to 48326, 48316 to 48320, 51053 48302 to 48315 48300, 48301 49022 to 49033 49137 to 49161 47876 to 47887 47864 to 47872 47839 to 47857 48009 to 48015 48006 to 48008, 51043 47971 to 48005 48055 to 48057 60042 to 60046 49986 to 49988 50096 to 50098, 51558	DINO-00422	24470 to 24475 24476 to 24502 24503, 24504 24505 24506 to 24522 24523 to 24528 24529 to 24533 24534 24535 to 24548 24549, 24550 24551 to 24562 24563 to 24587 24588 to 24599 24600 to 24608 24609 to 24627 24628 to 24634 24635 to 24637 24638 24639 to 24673 24674 to 24676 24677 to 24681 24682 to 24684 24685 to 24687 24688
		79	FWS/V-87SN-0070, 0071, 0072, 0094 to 0099, 1001, 1002, 1003,  1004, 1100, 1101, 1102, 1103, 1190, 1198, 1199, 1203, 1204,  1205,  1227, 1228, 1229, 1230,	51125, 51126 51132 to 51134 51441 to 51460 50099 to 50110 50117 to 50121, 51559 50111 to 50116 51252 to 51254 51257, 51258 51261, 51246 51622, 51131 51127 to 51130 51180 to 51183, 51612 51184, 51185, 51355 51247 to 51251 51255, 51256 51259, 51260	DINO-00422	24689, 24690 24691 to 24693 24694 to 24713 24714 to 24725 24726 to 24730 24731 24732 to 24737 24738 to 24740 24741, 24742 24743, 24744 24745, 24746 24747 to 24750 24751 to 24754 24755 24756, 24747 24758 24759 to 24763 24764, 24765 24766, 24757
		3	FWS/V-87SN- J1	47873 to 47875	DINO-00422	24768 to 24770
	GR Plankton net	4	USBR-87ZP-06, 07, 19, 20	68721, 68722, 68735, 68736	DINO-00422	24771, 24772 24773, 24774
1988	YA Seine	22	FWS/V-88SN-032 to 038	47067 to 47086, 47516, 47530	DINO-00422	24775 to 24794, 24795, 24796
	YA (Echo Park) Drift	96	FWS/V-88SN-D058, 060 to 102	68490 to 68585	DINO-00422	24797 to 24892

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
	GR Seine	54	FWS/V-88SN-048, 068 to 70, 99 to 106, 107,  108	47115 to 47118 47186 to 47196 47277 to 47305 47306 to 47310, 47167 47311 to 47314	DINO-00422	24893 to 24896 24897 to 24907 24908 to 24936 24937 to 24941, 24942 24943 to 24946
1989	(none)					
1990	YA (Echo Park) Drift	379	LFL-90YA-6291 to 7073, 7081 to 7093, 7101 to 7103,  7121 to 7133, 7141 to 7143, 7151,  7152 to 7153, 7161 to 7163, 7171,  7172,  7173 to 8013 (96) <sup>a</sup>	74304 to 74404 74405 to 74433 74434 to 74443, 74978 74444 to 74459 74460 to 74478 74479 to 74482, 74483 to 74485 74486 to 74495 74496 to 74516 74517 to 74520, 74976 74521 to 74524, 74977 74525 to 74679	DINO-00277	13939 to 14039 14040 to 14068 14069 to 14078 14079 14080 to 14095 14096 to 14114 14115 to 14118 24947 to 24949 24950 to 24959 24960 to 24980 24981 to 24984 24985 24986 to 24989 24990 24991 to 25145
	YA (Echo Park) Seine	23	LFL-90YA-630S1, 715S1,716S1 <sup>a</sup>	74680 to 74687 74688 to 74702	DINO-00277	25146 to 25153 25154 to 25168
	YA(Echo Park)Dipnet	3	LFL-90YA-714D1 <sup>a</sup>	74703 to 74705	DINO-00277	25169 to 25171
	GR (Jensen-Split Mt) Drift net	270	LFL-90GR-6291 to 7313 (93) <sup>a</sup>	74706 to 74975	DINO-00277	25172 to 25441
1991	YA (Echo Park) Drift	436	LFL-91YA-6301 to 709D3,  7101 to 7271, 7291 to 8053 (127) <sup>a</sup>	74985 to 75084, 75085 75086 to 75359 75360 to 75420	DINO-00300	15010 to 15109 25442 25443 to 25716 25717 to 25777
1992	YA (Echo Park) Drift	1,107	LFL-92YA-6252, 6253, 626A1,  626A2,  626A3, 626B1 to 626C1, 626C2, 262C3 to 6282,  6283 to 6291,  6292,  6293, 630A1 to 701D1,  701D2,  701D3, 7021,  7022 to 703A2,  703A3 to 703D2,  703D3,	75895 to 75899, 76802 75900 to 75902, 76803, 75890 75905, 75906, 76804 75907 to 75912 75914, 76805 75915 to 75935, 76806 to 76808 75938 to 75942, 76809, 76810 75945 to 75948, 76811 75949, 75951, 76812 75952 to 76005, 76813 to 76822 76006, 76007, 76009, 76823 76010, 76011, 76824 76014 to 76016, 76927 76018 to 76036, 76828 to 76831 76038 to 76072, 76832 to 76839 76073, 76075, 76076, 76840	DINO-00317	25778 to 25782 25783 25785 to 25787 25788, 25784 25789 to 25791 25792 to 25797 25798, 25799 25800 to 25820 25821 to 25823 25824 to 25828 25829, 25830 25831 to 25834 25835 25836 to 25838 25839 to 25892 25893 to 25902 25903, 25904 25905, 25906 25907 to 25909 25910 to 25912 25913 25914 to 25932 25933 to 25936 25937 to 25971 25972 to 25979 25980, 28981 25982, 25983

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
			704A1,	76077 to 76080, 76082, 76841		25984 to 25987 25988, 25989
			704A2,	76083 to 76085, 76087 to 76089, 76842, 76843		25990 to 25992 25993 to 25995 25996, 25997
			704A3 to 704B3,	76090 to 76105, 76844 to 76847		25998 to 26013 26014 to 26017
			704C1,	76106, 76108 to 76110, 76848, 76849		26018 26019 to 26021 26022, 26023
			704C2,	76111 to 76115, 76850		26024 to 26028 26029
			704C3,	76116, 76117, 76119, 76851		26030, 26031 26032, 26033
			704D1 to 709C3T,	76120 to 76191, 76852 to 76870		26034 to 26105 26106 to 26124
			709D1B to 709D3T,	76193 to 76199, 76871 to 76873		26125 to 26131 26132 to 26134
			710A1 to 715B3T,	76200, 76202 to 76305, 76874 to 76922		26135 26136 to 26239 26240 to 26288
			715C1 to 7163,	76306 to 76333, 76929 to 76930		26289 to 26316 26317 to 26318
			717A1B to 7191,	76335 to 76450, 76931 to 76944, 75891 to 75894		26319 to 26434 26435 to 26448 26449 to 26452
			7192,	76451, 76945, 76453 to 76456		26453, 26454 26455 to 26458
			7193 to 723C3T,	76457 to 76495, 76497 to 76522, 76825,		26459 to 26497 26498 to 26523 26524
			724A1B to 724D3T,	76946 to 76955, 76523 to 76537, 76539 to 76551, 76553 to 76580, 76956 to 76980		26525 to 26534 26535 to 26549 26550 to 26562 26563 to 26590 26591 to 2661
			725A1B to 7263,	76581 to 76640, 76981 to 77000		26616 to 26675 26676 to 26695
			727A1S to 727D3T,	76641 to 76661, 76663 to 76707, 77001 to 77024		26696 to 26716 26717 to 26761 26762 to 26785
			7281 to 7283,	76708 to 76712, 76714 to 76717, 77025 to 77027		26786 to 26790 26791 to 26794 26795 to 26797
			729A1S to 8023 (420)	76718 to 76792, 77028 to 77039		26798 to 26872 26873 to 26884
	YA (Echo Park) Seine	14	LFL-92YA-709S1, 716S, 725SN, 728S, 730S <sup>a</sup>	77040, 77041 76793 to 76801, 77042 77043, 77044	DINO-00317	26885, 26886 26887 to 26895 26896 26897, 26898
1993	YA (Echo Park) Drift	7	FWS/V-93RZDR052, 057, 058	28053, 28054, 28058 to 28062	DINO-00326	26899, 26900 26901 to 26905
		704	LFL-93YA-7011 to 7023, 7031, 7032, 7033 704A1 to 7113,	77645 to 77670 77671, 77672, 77674, 77675, 78240 77676 to 77679, 77681, 78241 77682 to 77685, 78242 77686 to 77827	DINO-00326	26906 to 26931 26932 to 26935 26936 *** 26937 to 26940 26941, 26942 26943 to 26946 26947 26948 to 27089

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
			7121,	77828, 77829, 77831, 78243		27090, 27091 27092, 27093
			7122,	77832, 77833, 77835 to 77837, 78244		27094, 27095 27096 to 27098, 27099
			7123,	77838, 77840 to 77842, 78245		27100 27101 to 27103, 27104
			7131 to 722B3,	77843 to 77974, 78246 to 78263		27105 to 27236 27237 to 27254
			722C2 to 7242,	77976 to 77997, 78264 to 78268		27255 to 27276 27277 to 27281
			7243,	77998, 78000, 78001, 78269		27282, 27283 27284, 27285
			725A1,	78270		27286
			725A2,	78002, 78271		27287, 27288
			725B1 to 728A3,	78004 to 78026, 78272 to 78281		27289 to 27311 27312 to 27321
			728B1,	78027, 78028, 78030, 78282		27322, 27323 27324, 27325
			728B2 to 8021,	78031 to 78105, 78283 to 78301,		27326 to 27400 27401 to 27419
			8022 to 9072 (213) <sup>a</sup>	77644, 78106 to 78239, 78302 to 78356		27420 27421 to 27554 27555 to 27609
	YA (Echo Park) Seine	13	LFL-93YA-710S, 726S, 808S, 813S <sup>a</sup>	78357 to 78367 78368, 78369	DINO-00326	27610 to 27620 27621, 27622
	GR (Echo Park) Seine	7	LFL-LODORE-G01	73345 to 73351	DINO-00326	27623 to 27629
	GR (Echo Park) Drift	7	LFL-93YG-7301, 7302, 8061, 8062 (4) <sup>a</sup>	78748 to 78751 78752 to 78754	DINO-00326	27630 to 27633 27634 to 27636
		11	FWS/V-93RZDR061, 069, 072, 074, 077, 078, 088, 089	28063, 28064 28065 to 28067 28068 to 28070 28071 to 28073	DINO-00326	27637, 27638 27639 to 27641 27642 to 27644 27645 to 27647
	GR (Echo Park/Rain- bow Park) Light Trap	33	FWS/V-93RZLT070 to 072, 074 to 076, 199 to 208 (16)	27607 to 27612 27613 to 27618 27952 to 27972	DINO-00326	27648 to 27653 27654 to 27659 27660 to 27680
1994	YA (Echo Park) Drift	267	LFL-94YA-6281 to 8053 (117) <sup>a</sup>	80870 to 81136	DINO-00331	27681 to 27947
	YA (Echo Park) Seine	71	LFL-LODORE-YA01 to 09	73859 to 73929	DINO-00331	27948 to 28018
	GR (Jensen-Split Mt) Drift net	489	LFL-94GRU-6291 to 8093 (162) <sup>a</sup>	81529 to 82016, 82167	DINO-00331	28019 to 28506 28507
	GR (Island Pk/Rain- bow Pk) Light Trap	20	FWS/V-94RZLT160, 161, 165 to 169, 173 to 176	45186, 45187 45193 to 45210	DINO-00331	28508, 28509 28510 to 28527
	GR (Lodore) Seine	184	LFL-LODORE-G02,  G03 to G08, G10 to G15, G19 to G21, G33 to G41	73352 to 73360, 73975 73361 to 73398 73400 to 73444 73466 to 73488 73570 to 73637	DINO-00331	28528 to 28536 28537 28538 to 28575 28576 to 28620 28621 to 28643 28644 to 28711
	GR (Lodore) Electrofishing	1	LFL-LODORE-G09	73399	DINO-00331	28712

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
1995	YA (Echo Park) Drift	585	LFL-95YA-7061 to 8152 (138) <sup>a</sup>	91608 to 92192	DINO-00337	28713 to 29297
	YA (Echo Park) Seine	45	LFL-LODORE-YA10 to 15	73930 to 73974	DINO-00337	29298 to 29342
	GR (Jensen-Split Mt) Drift net	606	LFL-95GRU-7071 to 8153 (161) <sup>a</sup>	84339 to 84943, 84336	DINO-00337	29343 to 29947 29948
	GR (Lodore) Seine	145	LFL-LODORE-G42, G46, G47, G49, G54 to G57, G59, G63 to G70	73638 to 73642, 73660 to 73671, 73991, 73672 to 73684, 73692 to 73696, 73720 to 73752, 73761 to 73768, 73791 to 73858	DINO-00337	29949 to 29953, 29954 to 29965, 29966, 29967 to 29979, 29980 to 29984, 29985 to 30017, 30018 to 30025, 30026 to 30093
1996	YA (Echo Park) Drift	790	LFL-96YA-6291 to 8143 (199) <sup>a</sup>	89836 to 90625	DINO-00353	30094 to 30883
	GR (Echo Park) Light trap	16	FWS/V-96RZLT050, 092, 093, 099, 114, 115 to 117	43739, 43740, 43752 to 43754, 43774, 43775, 43814, 43815, 44002, 43816 to 43821	DINO-00353	30884, 30885, 30886 to 30888, 30889, 30890, 30891, 30892, 30893, 30894 to 30899
	GR (Bobby Island) Light trap	1	Z44005	44005	DINO-00353	30900
1997	(none)					
1998	YA (Echo Park) Drift	571	UDWR-98Y-7021 to 7243, 7251 to 8203 (175) <sup>a</sup>	53660 to 53953, 54232, 53957 to 54231, 54233	DINO-00353	30901 to 31194, 31195, 31196 to 31470, 31471
	YA(Echo Park)Dipnet	3	UDWR-98Y-724DN <sup>a</sup>	53954 to 53956	DINO-00353	31472 to 31474
	GR (Echo Park) Light trap	15	FWS-MG98L-010, 060,063, 084 to 088, 103 to 105	51684, 51724 to 51726, 51763 to 51769, 51789 to 51792	DINO-00353	31475, 31476 to 31478, 31479 to 31485, 31486 to 31489
1999	YA (Echo Park) Drift	901	UDWR-99Y-6301 to 8193 (206) <sup>a</sup>	58425, 58427 to 59326	DINO-00353	31490, 31491 to 32390
2000	YA (Echo Park) Drift	810	LFL-00YA-6241 to 727D3, 7281 to 7283, 7291 to 7293, 7301 to 7303, 731A1 to 731D3, 8011 to 8013, 8021 to 8023, 8031 to 8033, 8041 to 8052, 806A1 to 806D3, 8071 to 8073, 8082, 8083, 8091 to 8093, 8102, 823A1 to 8253 (196) <sup>a</sup>	71421 to 72035, 72038 to 72053, 72056 to 72068, 72071 to 72075, 72078 to 72124, 72143 to 72150, 72155 to 72162, 72166 to 72173, 72177 to 72184, 72189 to 72210, 72228 to 72234, 72238 to 72240, 72241, 72242, 72244 to 72246, 72249, 72250, 72252 to 72294	DINO-00353	32391 to 33005, 33006 to 33021, 33022 to 33034, 33035 to 33039, 33040 to 33086, 33087 to 33094, 33095 to 33102, 33103 to 33110, 33111 to 33118, 33119 to 33140, 33141 to 33147, 33148 to 33150, 33151, 33152, 33153 to 33155, 33156, 33157, 33158 to 33200
	YA (Echo Park) Seine	11	LFL-00YA-823S2 <sup>a</sup>	74265 to 74275	DINO-00353	33201 to 33211

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
	GR (Echo Park) Drift	64	LFL-00GR-7272, 7281, 7282, 7292, 7301, 731A3 to 731D3, 8011 to 8013, 8021 to 8023, 8032, 8033, 8051, 8053, 806A1 to 806D3, 8071, 8081, 8091, 8093, 8102 (31) <sup>a</sup>	72036, 72037 72054, 72055 72069, 72070 72076, 72077 72125 to 72142 72151 to 72154 72163 to 72165 72174 to 72176 72185 to 72188 72211 to 72227 72235 to 72237 72243, 72247 72248, 72251	DINO-00353	33212, 33213 33214, 33215 33216, 33217 33218, 33219 33220 to 33237 33238 to 33241 33242 to 33244 33245 to 33247 33248 to 33251 33252 to 33268 33269 to 33271 33272, 33273 33274, 33275
	GR (Echo Park) Seine	28	LFL-00GR-823S1, 824S2, 824S3 <sup>a</sup>	74276 to 74296 74297 to 74303	DINO-00353	33276 to 33296 33297 to 33303
2001	YA (Echo Park) Drift	421	LFL-01YA-6281 to 7062, 7063 to 8083 (141) <sup>a</sup>	79472 to 79605, 79835 to 79862 79606 to 79806, 79864 to 79921	DINO-00362	33304 to 33437 33438 to 33465 33466 to 33666 33667 to 33724
	GR (Echo Park) Drift	28	LFL-01GR-6291 to 8081 (13) <sup>a</sup>	79807 to 79834	DINO-00362	33725 to 33752
2002	YA (Echo Park) Drift	457	LFL-02YA-6181 to 8043 (171) <sup>a</sup>	82981 to 83437	DINO-00369	33753 to 34209
	GR (Echo Park) Drift	221	LFL-02GR-6212 to 8042 (119) <sup>a</sup>	84114 to 84334	DINO-00368	34210 to 34430
	GR (Lodore/Whirlpool) Electrofishing	5	LFL-02GR-LWEL1 to 3, LFL-GR-MISCLW-1	86922 to 86925 91590	DINO-00368	34431 to 34434 34435
	GR (Lodore/Whirlpool) Seine	970	LFL-02GR-LW001 to 003,005, 007, 008, 010, 011, 014, 018 to 031, 040 to 043  044 to 064,  073 to 101	85739 to 85753 85754 to 85797 85798 to 86010 86068 to 86118, 86921 86119 to 86452, 86926 86519 to 86829	DINO-00368	34436 to 34450 34451 to 34494 34495 to 34707 34708 to 34758 34759 34760 to 35093, 35094 35095 to 35405
2003	YA (Echo Park) Drift	519	LFL-03YA-6291 to 8181 (180) <sup>a</sup>	85215 to 85733	DINO-00369	35406 to 35924
	GR (Echo Park) Drift	487	LFL-03GR-7091 to 8182 (138) <sup>a</sup>	86928 to 87414	DINO-00368	35925 to 36411
	GR (Lodore/Whirlpool) Trammel net	2	LFL-GR-MISCLW-2, LFL-GR-MISCLW-3	91591 91592	DINO-00368	36412 36413
	GR (Lodore/Whirlpool) Seine	1096	LFL-03GR-LW114 to 117,  118,  119, 122 to 124, 126, 129 to 136, 138, 139, 144 to 146,  147 to 151, 153 to 158, 160 to 163,  164 to 170, 171,  172 to 174,  175 to 179,	87448 to 87479, 88642, 88643 87480 to 87493, 88644 87494 to 87532 87533 to 87679 87725 to 87781, 88645 87782 to 87993 87994 to 88058, 86927 88059 to 88150 88151 to 88156, 88158 to 88161, 88646 88162 to 88212, 88647 88213 to 88306	DINO-00368	36414 to 36445 36446, 36447 36448 to 36461 36462 36463 to 36501 36502 to 36648 36649 to 36705 36706 36707 to 36918 36919 to 36983 36984 36985 to 37076 37077 to 37082 37083 to 37086, 37087 37088 to 37138 37139 37140 to 37233



Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	DINO Catalog #s
			184 to 187,	88367 to 88398, 88401 to 88405, 88648		37234 to 37265 37266 to 37270 37271
			188,	88399, 88400		37272, 37273
			189 to 191, 194 to 218	88406 to 88641		37274 to 37509
2004	YA (Echo Park) Drift	704	LFL-04YA-6261 to 8123 (189) <sup>a</sup>	90631 to 91333, 91585	DINO-00369	37510 to 38212, 38213
	YA (Echo Park/ Deerlodge Park)Seine	36	LFL-04YA-SSN01 to 04	89498 to 89533	DINO-00369	38214 to 38249
	GR (Echo Park) Drift	246	LFL-04GR-7111 to 8111 (133) <sup>a</sup>	91339 to 91584	DINO-00368	38250 to 38495
	GR (Echo Park) Seine	24	LFL-04GR-SSN01 to 03	89474 to 89497	DINO-00368	38496 to 38519
	GR (Lodore/Whirl- pool) Seine	700	LFL-04GR-04LW222 to 224, 226, 227, 232 to 241, 245, 246,  247 to 262, 266 to 269, 271 to 274, 276, 278 to 290	88690 to 88707 88708 to 88823 88869 to 88907, 89534 88908 to 89219 89260 to 89340 89341 to 89473	DINO-00368	38520 to 38537 38538 to 38653 38654 to 38692 38693 38694 to 39005 39006 to 39086 39087 to 39219

<sup>a</sup> Field collection numbers are not sequential but rather consist of the date (e.g., 630 for June 30, sometimes followed by A, B, C, or D to segregate collections taken at different times on the same date) followed by a sequential drift net (usually 1, 2, or 3) seine (e.g., S, S1, SN) or dip net (e.g., D1 except when D is used to represent the fourth time-period for drift net collections) number which is reset for each date. If any field numbers are given as non-sequential ranges, the number of collections for the entire set is given in parentheses following the last number or range.



**Appendix III**

**Larval Fish Laboratory Collection–National Park Service Holdings  
From Glen Canyon National Recreation Area (GLCA)**

(Note: each LFL Collection and NPS catalog number represents either a single specimen or a discrete lot of fish, which normally consists of all specimens of a single taxon from a single collection or source.)

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**ANCS+ import file of holdings submitted as an Excel spreadsheet.**

GLCAallforNPSimportfile.xls

**Associated Access database of selected fields extracted from LFL's Specify catalog.**

LFL Collection GLCA-all.mdb

**Summary of holdings by river reach.**

Colorado River (CO) from Horseshoe Bend to Glen Canyon Dam, Lake Powell, and Colorado River from inflow to boundary with Canyonlands National Park at river kilometer 325.6 (river mile 202.3) above Lees Ferry, AZ (based on interpolation from river miles given in Belknap's Revised Canyonlands River Guide by Westwater Books–note that this guide gives river mile at North Wash near Hite as about 168, whereas GLCA map on NPS web site gives a river mile of about 139 above Glen Canyon Dam, which is about 15 river miles above Lees Ferry, resulting in a 14-15 river mile discrepancy for North Wash):

389 cataloged lots, 98,545 specimens, from 131 collections, 10 August 1985 to 13 July 1995, river kilometer 285.0 to 323.8 (river miles 177.0 to 201.1), Sheep Canyon to above Imperial Canyon.

Dirty Devil River (DD), lower reach:

2 cataloged lots, 10 specimens, from 1 collection, 31 July 1984, river kilometer 11.1 (river mile 7.0).

Total:

391 cataloged lots, 98,555 specimens, from 132 collections, 31 July 1984 to 13 July 1995.

## Number of specimens by taxon in LFL Collection from NPS-GLCA.

<b>Taxon<sup>a</sup></b>	<b>No. of Specimens</b>	<b>Size Range (mm TL)</b>	<b>No. of lots</b>
<i>Dorosoma petenense</i>	57	6-20	8
<i>Cyprinella lutrensis</i>	7,978	<5-60	71
<i>Cyprinus carpio</i>	3,913	<5-25	37
<i>Gila robusta</i>	20	15-39	4
<i>Gila</i> sp.	2	11-28	2
<i>Notropis stramineus</i>	2,058	<5-30	40
<i>Pimephales promelas</i>	2,119	<5-35	45
<i>Ptychocheilus lucius</i>	29	10-40	14
<i>Rhinichthys osculus</i>	12	6-30	4
Cyprinidae sp.	74,076	<5-25	90
<i>Catostomus commersonii</i>	3	14-16	3
<i>Catostomus discobolus</i>	88	11-40	37
<i>Catostomus latipinnis</i>	2	19-22	2
<i>Xyrauchen texanus</i>	15	13-16	6
Catostomidae sp.	2	21-30	2
<i>Ameiurus melas</i>	1	34	1
<i>Ictalurus punctatus</i>	5	16-60	4
<i>Lepomis cyanellus</i>	2	11-25	2
<i>Micropterus salmoides</i>	1	41	1
<i>Pomoxis nigromaculatus</i>	22	<5-10	7
Actinopterygii sp. <sup>b</sup>	8,150	<5-25	11
<b>Totals</b>	<b>98,555</b>	<b>&lt;5-60</b>	<b>391</b>

<sup>a</sup> As indicated in the LFL Collection catalog database, the identity of some specimens in many taxa is questionable.

<sup>b</sup> Specimens unidentified even to family either because of damage or incomplete processing (e.g., only endangered species identified and segregated from the rest of the collection).

Number of cataloged specimens by taxon in LFL Collection from NPS-GLCA by NPS accession number.

NPS-Accession #, GLCA- Taxon <sup>a</sup> / Years	00356 1984	00442 1985	00443 1987	00444 1993	00445 1994	00446 1995
<i>Dorosoma petenense</i>				1	47	9
<i>Cyprinella lutrensis</i>	9	3	63	7,759	114	30
<i>Cyprinus carpio</i>				3,796	5	112
<i>Gila robusta</i>			20			
<i>Gila</i> sp.				1	1	
<i>Notropis stramineus</i>			20	1,987	14	37
<i>Pimephales promelas</i>			61	2,054	3	1
<i>Ptychocheilus lucius</i>		6	11	12		
<i>Rhinichthys osculus</i>			10	2		
Cyprinidae sp.				34,271	33,068	6,737
<i>Catostomus commersonii</i>				3		
<i>Catostomus discobolus</i>			5	37	46	
<i>Catostomus latipinnis</i>				2		
<i>Xyrauchen texanus</i>				15		
Catostomidae sp.					2	
<i>Ameiurus melas</i>				1		
<i>Ictalurus punctatus</i>		2		3		
<i>Lepomis cyanellus</i>	1			1		
<i>Micropterus salmoides</i>					1	
<i>Pomoxis nigromaculatus</i>				22		
Actinopterygii sp. <sup>b</sup>					8,150	
Totals	10	11	190	49,967	41,451	6,926

<sup>a</sup> As indicated in the LFL Collection catalog database, the identity of some specimens in many taxa is questionable.

<sup>b</sup> Specimens unidentified even to family either because of damage or incomplete processing (e.g., only endangered species identified and segregated from the rest of the collection).

Tabulated list of GLCA holdings by collection set with NPS accession and catalog numbers.

Year	Collection set	Lots	LFL Field Numbers	LFL Catalog #s	NPS Acc. #s	GLCA Catalog #s
1984	DD Seine/dip net	2	FWS/GJ-84L-047	14103 to 14104	GLCA-00356	22319, 22320
1985	CO Drift net	3	ERI-85DRI-006 to 008	67058 to 67060	GLCA-00442	22321 to 22323
	CO Seine	4	ERI-85SEI-072, 073, 077	67160 to 67166	GLCA-00442	22324 to 22327
1987	CO Seine	29	BIOWEST-87-051 to 054	68361 to 68375, 68486, 68487	GLCA-00443	22328 to 22342, 22343 to 22344
			BIOWEST-87-088, 089, 090	68441, 68442 68443 to 68452	GLCA-00443	22345, 22501 22502 to 22511
1993	CO RZ light trap	256	NPS-93RZ-031 to 083	27254 to 27508, 27516	GLCA-00444	22512 to 22766, 22767
1994	CO RZ light trap	67	NPS-94RZLPLT-01 to 10	47604 to 47613	GLCA-00445	22768 to 22777
			NPS-94RZLPLT043, 045 to 090	45278 to 45323, 47557 to 47567	GLCA-00445	22778 to 22823, 22824 to 22834
	CO RZ seine	13	NPS-94RZLPSN091 to 095	47568 to 47579, 45332	GLCA-00445	22835 to 22846, 22847
1995	CO RZ light trap	17	NPS-95RZLPLT050 to 053	44940 to 44956	GLCA- 00446	22848 to 22864