Non-native fish sampling at the Lees Ferry slough

Prepared for:

CRABS Meeting
1/12/2011

July 21-23, 2010

Colorado River mile

-12.10 → -12.33

Objectives

- Detect non-native species in slough area
- Determine best technique to capture non-native species
- PIT tag common carp (CRP) to track future growth and movement
- Obtain population estimate of CRP in slough area

Methods

- Back-pack electrofishing: right shoreline, three 600-second intervals, first night only
- Boat electrofishing: three sites per shoreline (6 total); only 2 total shocked on first night
- 3 trammel nets set along left shoreline
- 20 hoop nets – distributed evenly
  - Stink cheese bait (10)
  - Aquamax bait (10)
- 20 minnow traps – distributed evenly
  - Canned cat food bait
- Block net set at mouth of slough

Methods

- All native and non-native species except rainbow trout (RBT) were measured and sexed
- RBT were counted only
- All flannelmouth suckers (FMS) and CRP were scanned for PIT tags; non-PIT tagged FMS and CRP ≥150 mm total length (TL) received 134.2-kHz PIT tags
- All PIT tagged CRP received an operculum clip
- No species were weighed

Results

Table 1. Number of each species captured per sampling method near RM -12.0 during July 2010 sampling. Species are coded as followed: common carp (*Cyprinus carpio*; CRP); flannelmouth sucker (*Catostomus latipinnis*; FMS); rainbow trout (*Oncorhynchus mykiss*; RBT), and green sunfish (*Lepomis cyanellus*; GSF).

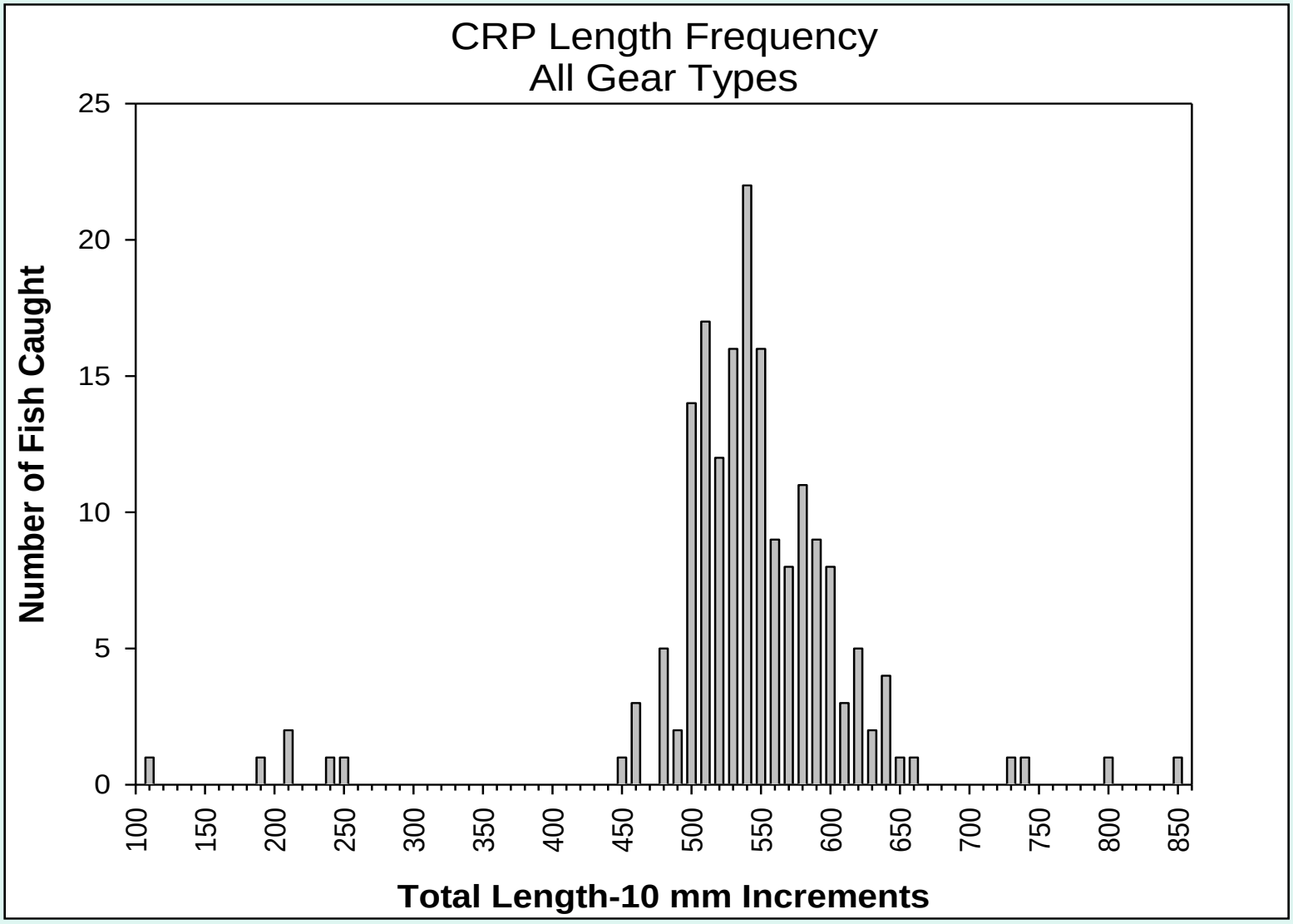
Date	Method	CRP	FMS	RBT	GSF
7/21/2010	Back-pack electrofishing	7	-	-	-
7/21/2010	Boat electrofishing	13	-	3	-
7/22/2010	Boat electrofishing	114	3	19	2
7/22/2010	Trammel netting	3	7	-	-
7/23/2010	Boat electrofishing	70	2	6	-
7/23/2010	Trammel netting	2	4	-	1
	Total	**209**	**16**	**28**	**3**
	% Composition	**81.6**	**6.3**	**10.9**	**1.2**

Results

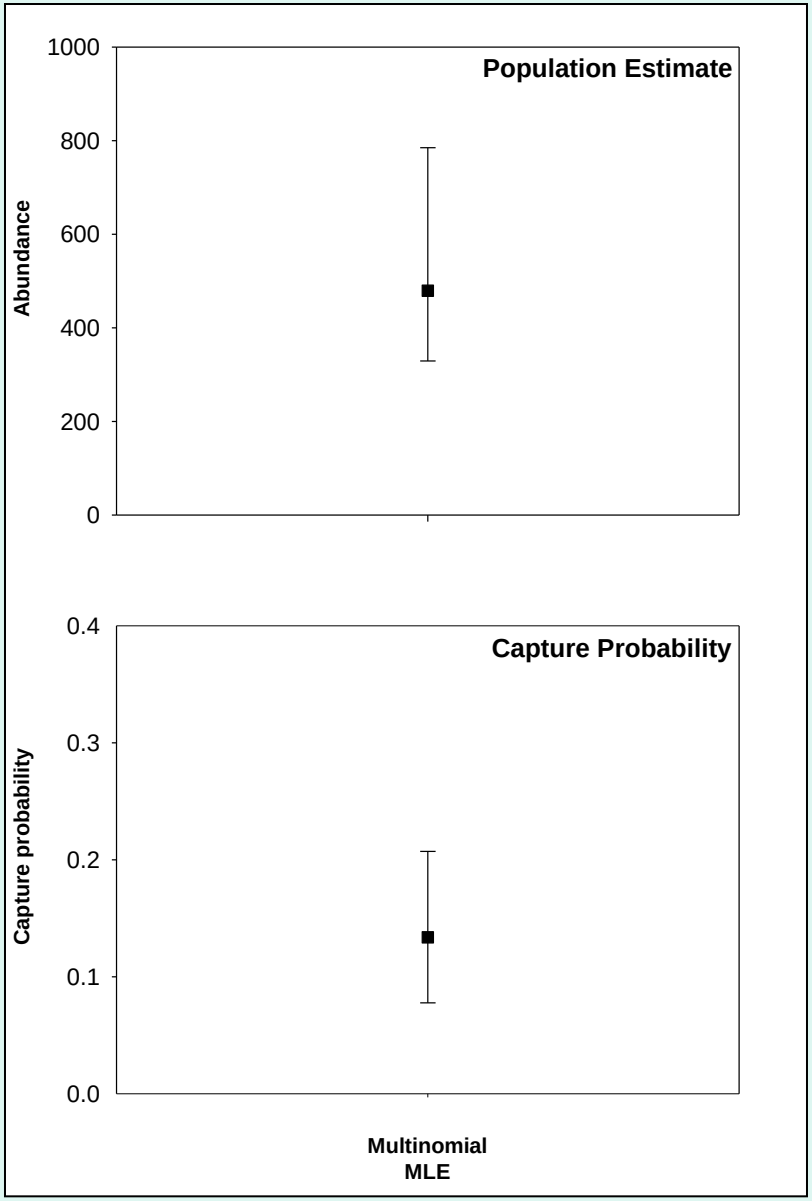
Table 2. Growth and movement information resulting from recaptures of PIT-tagged common carp (*Cyprinus carpio*; CRP) and flannelmouth sucker (*Catostomus latipinnis*; FMS) captured during July 2010 sampling near RM -12.0. Mark location LCR indicates species was tagged in the Little Colorado River and is calculated into distance moved by adding the value to Mark location, where 61.70 represents the RM at the confluence. Negative values for distance moved indicates movement upstream.

Method	Species	Tag number	Date marked	Mark location (RM)	Mark location LCR (RM)	Date recaptured	Recap location (RM)	Days out	Mark length (mm)	Recap length (mm)	Distance moved (miles)	Instant growth (mm/day)
Boat electro-fishing	CRP	3D9.1BF198D35C	11/3/2003	-12.00	-	7/22/2010	-12.28	2,453	399	504	-0.28	0.0428
	CRP	3D9.1BF198D3F4	11/3/2003	-12.00	-	7/23/2010	-12.28	2,454	451	519	-0.28	0.0277
	CRP	3D9.1BF198DAFA	11/3/2003	-11.80	-	7/22/2010	-12.33	2,453	403	513	-0.53	0.0448
	CRP	3D9.1BF1CD38D4	7/12/2004	-0.20	-	7/22/2010	-12.28	2,201	286	502	-12.08	0.0981
	FMS	3D9.1BF22A9837	1/12/2006	45.10	-	7/22/2010	-12.33	1,652	449	527	-57.43	0.0472
Trammel netting	FMS	5116164E1E	5/17/1999	61.70	0.04	7/22/2010	-12.31	4,084	396	507	-74.05	0.0272
	FMS	3D9.1BF256209C	4/7/2006	61.70	0.07	7/22/2010	-12.19	1,567	265	504	-73.96	0.1525
	FMS	3D9.1BF1CD2BF6	4/8/2006	132.50	-	7/22/2010	-12.31	1,566	186	406	-144.81	0.1405
	FMS	3D9.1BF1CD322B	4/8/2006	73.70	-	7/23/2010	-12.31	1,567	195	438	-86.01	0.1551
	FMS	3D9.1C2D8AF6F6	6/30/2010	-12.25	-	7/22/2010	-12.31	22	504	521	-0.06	0.7727

Results


CRP Length Frequency
All Gear Types
Number of Fish Caught
0
5
10
15
20
25
100
150
200
250
300
350
400
450
500
550
600
650
700
750
800
850
Total Length-10 mm Increments

Results


Population Estimate
Abundance
1000
800
600
400
200
0
Capture Probability
Capture probability
0.4
0.3
0.2
0.1
0.0
Multinomial
MLE

Conclusions

- Slough is dominated by common carp
- Large population of carp in 0.23 mile span may suggest sampling occurred during spawning aggregation; 71 ripe males out of 180 that did not include recaps= 39.4% of population
- 26 total CRP recaptures from boat electrofishing; 165 new PIT tags (boat electrofishing) reflects a low recapture rate/ lots of carp
- No CRP or FMS ≤ 100 mm TL were captured during this sampling; adult population
- No fish species captured in hoop nets or minnow traps throughout sampling
- Slough most likely serves as a thermal refuge for CRP and FMS
- Future monitoring of the slough may be incorporated into Lees Ferry monitoring trips