

Fish Identification Guide For Throw trap Samples

**Florida International University
Aquatic Ecology Lab
April 2007**

**Prepared by
Tish Robertson, Brooke Sargeant, and Raúl Urgellés**

Table of Contents

Basic fish morphology diagrams.....	3
Fish species by family.....	4-31
Gar.....	4
Bowfin.....	4
Tarpon.....	5
American Eel.....	5
Bay Anchovy.....	6
Pickerels.....	6-7
Shiners and Minnows.....	7-9
Bullhead Catfishes.....	9-10
Madtom Catfish.....	10
Airbreathing Catfish	11
Brown Hoplo.....	11
Orinoco Sailfin Catfish.....	12
Pirate Perch.....	12
Topminnows	13-16
Livebearers.....	17-18
Pupfishes.....	19-20
Silversides.....	20-21
Snook.....	21
Sunfishes and Basses.....	22-25
Swamp Darter.....	26
Mojarra.....	26
Everglades pygmy sunfish.....	27
Cichlids.....	28-30
American Soles.....	31
Key to juvenile sunfish.....	32
Key to cichlids.....	33-38
Note for Reader/References.....	39

Basic Fish Morphology Diagrams

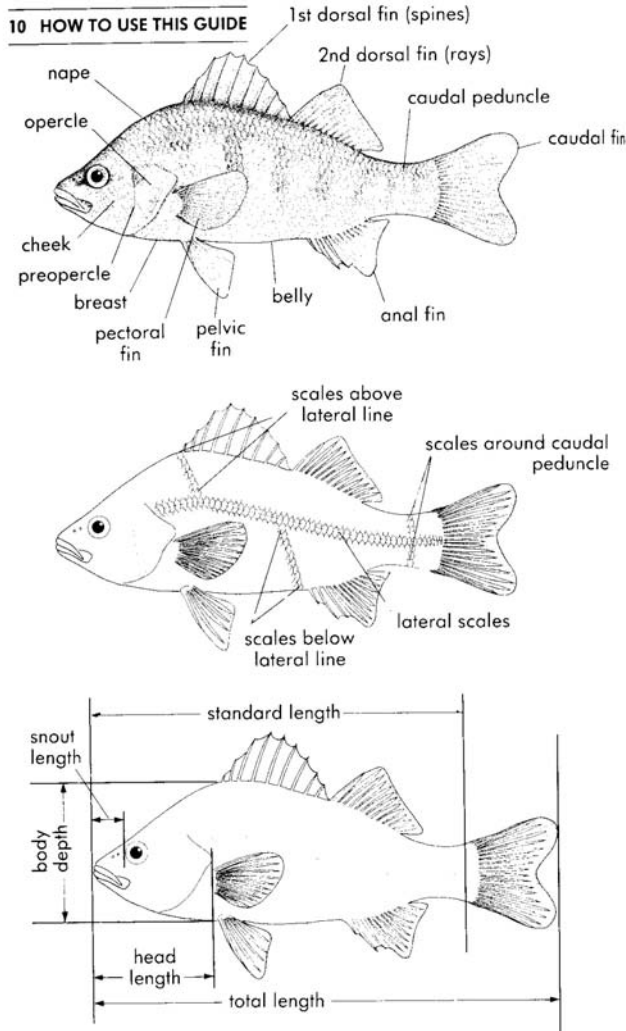


Fig. 1 Structures, counts, and measurements useful in fish identification. See Glossary for definitions of terms.

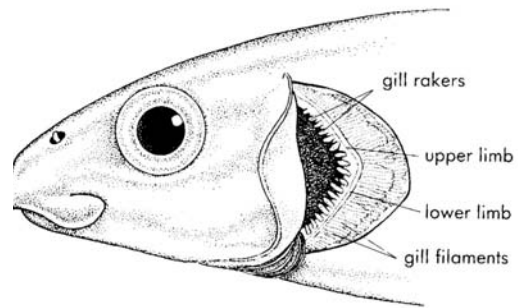


Fig. 3 How to count gill rakers. Count rakers on the 1st arch exposed when the gill cover is lifted. All rakers, including rudiments, are counted unless "upper limb" or "lower limb" of arch is specified.

Figures from Page and Burr (1991).

FAMILY: Lepisosteidae (gars)

SPECIES:

Lepisosteus platyrhincus

COMMON NAME:

Florida gar

ENP CODE: 17

GENUS-SPECIES CODE:

LEPPLA

DESCRIPTION:

- Long, thin body
- Long snout, prominent teeth
- Dorsal and anal fins far back on body
- Non-overlapping, diamond-shaped ganoid scales
- Rounded caudal fin

SIMILAR SPECIES:

- Chain and Redfin Pickerels
- Pike killifish

NOTE: Very low frequency in throw trap



FAMILY: Amiidae (bowfin)

SPECIES:

Amia calva

COMMON NAME:

bowfin

ENP CODE: 55

GENUS-SPECIES CODE:

AMICAL

DESCRIPTION:

- Long, cylindrical body
- Long dorsal fin extends more than half length of back
- Large mouth extending past eye, many teeth
- Tubular nostrils
- Large, bony gular plate
- Black spot near base of upper caudal fin base in young

SIMILAR SPECIES:

NOTE: Rare in throw traps



Photo from:
USFWS, <http://images.fws.gov/>

FAMILY: Megalopidae (tarpon)

SPECIES:

Megalops atlanticus

COMMON NAME:

Tarpon

ENP CODE: 51

GENUS-SPECIES CODE:

MAGATL

DESCRIPTION:

- Large, oblique mouth with projecting lower jaw
- Single dorsal fin begins above a point behind origin of pelvic pin
- Last dorsal fin ray elongate

SIMILAR SPECIES:

- Golden shiner

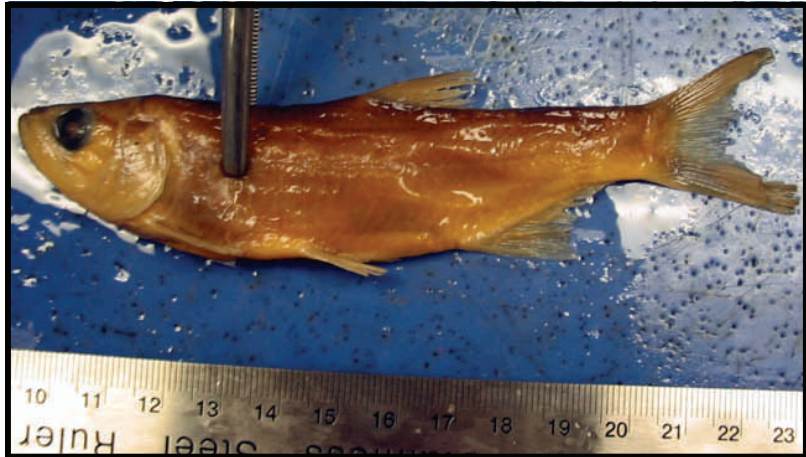


Photo from:
<http://www.marinebiology.edu/marshall/Vert/Ichthyofauna/megalops.htm>

FAMILY: Anguillidae (freshwater eels)

SPECIES:

Anguilla rostrata

COMMON NAME:

American eel

ENP CODE: 54

GENUS-SPECIES CODE:

ANGROS

DESCRIPTION:

- Snakelike body
- Long dorsal fin extends more than half of body, continuous with caudal and anal fins
- Lower jaw extends beyond upper jaw
- Single, small gill slit in front of pectoral fin

SIMILAR SPECIES:

NOTE: Rare in throw traps

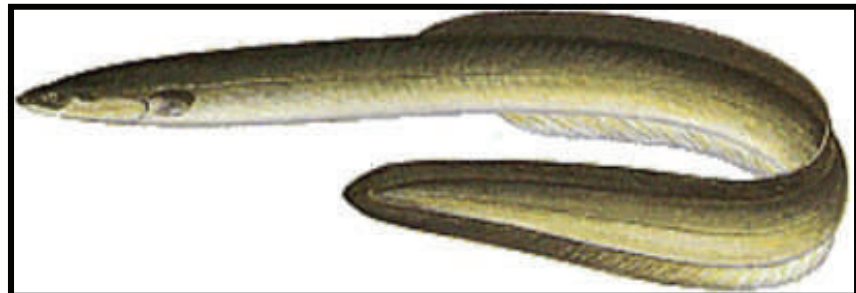


Photo from:
USFWS, <http://www.fws.gov/northeast/ameel/>

FAMILY: Engraulidae
(anchovies)

SPECIES:

Anchoa mitchilli

COMMON NAME:

Bay anchovy

ENP CODE: 57

GENUS-SPECIES CODE:

ANCMIT

DESCRIPTION:

- Very short snout
- Dorsal fin far back—begins above or only slightly in front of anal fin.

NOTE: Rare in throw traps

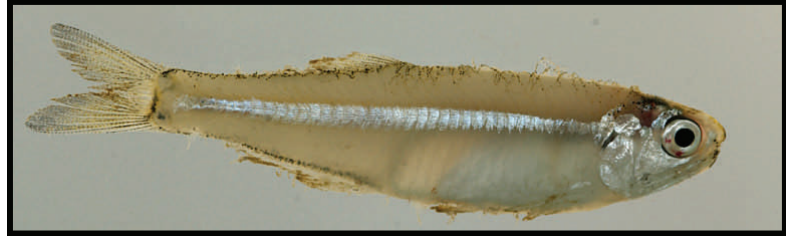


Photo from:
<http://www.samford.edu/schools/artsci/biology/vert-zoo-04s/pages/107.htm>

FAMILY: Esocidae (pikes)

SPECIES: *Esox americanus*

COMMON NAME: Redfin pickerel

ENP CODE: 89

GENUS-SPECIES CODE: ESOAME

DESCRIPTION:

- Long, thin body
- Emarginate tail
- Large duck-bill-like snout
- Dorsal fin far back along body
- Fully scaled cheek and opercle
- Black suborbital bar slanted toward rear (1)

SIMILAR SPECIES:

- Chain pickerel
- Pike killifish
- Gar

NOTE: Low frequency in throw traps; often sampled in southern WCA 3A



FAMILY: Esocidae (pikes)

SPECIES:

Esox niger

COMMON NAME:

Chain pickerel

ENP CODE: 14

GENUS-SPECIES CODE:

ESONIG

DESCRIPTION:

- Long, thin body
- Emarginate tail
- Large duck-bill-like snout
- Dorsal fin far back along body
- Fully scaled cheek and opercle
- Wavy bars on side (young)
- Vertical black suborbital bar (1)

SIMILAR SPECIES:

- Redfin pickerel
- Pike killifish
- Gar

NOTE: Rare in throw traps



Photo from:
<http://www.samford.edu/schools/artsci/biology/zoology/vertzoo-05s/pages/190.htm>

FAMILY: Catostomidae (suckers)

SPECIES:

Erimyzon sucetta

COMMON NAME:

Lake chubsucker

ENP CODE: 33

GENUS-SPECIES CODE:

ERISUC

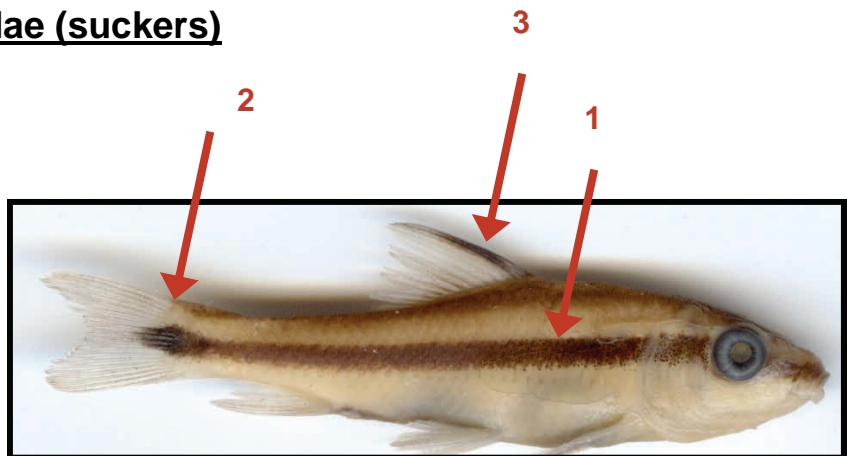
DESCRIPTION (juveniles only):

- Thick black line down body—slim and even (1)
- Emarginate tail
- Sub-terminal mouth
- Large black blotch on caudal fin base (2)
- Black blotch on leading edge of dorsal fin (3)

SIMILAR SPECIES:

- Taillight shiner and coastal shiner
- Bluefin killifish
- Largemouth bass

NOTE: Low frequency in throw traps; found throughout



FAMILY: Cyprinidae (minnows)

SPECIES:

Notemigonus crysoleucas

COMMON NAME:

Golden shiner

ENP CODE: 9

GENUS-SPECIES CODE:

NOTCRY

DESCRIPTION:

- Strongly decurved lateral line
- Small, upturned mouth
- Herringbone lines on young
- Falcate anal fin

NOTE: Very low frequency in throw traps



Photo from:
<http://www.outdooralabama.com/fishing/images/Shinergolden400A.jpg>

SPECIES:

Notropis maculatus

COMMON NAME:

Taillight shiner

ENP CODE: 32

GENUS-SPECIES

CODE:

NOTMAC

DESCRIPTION:

- Thick black line down body—slim and even (1)
- Emarginate tail
- Beak-like mouth
- Large black blotch on caudal fin base (2)

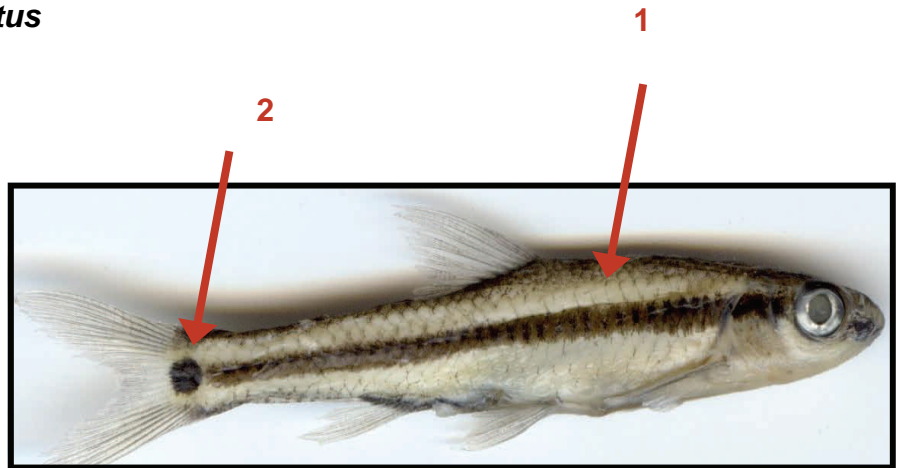
-Black-edged scales lined with black on both sides of the black line

-Black blotch on leading edge of dorsal fin

SIMILAR SPECIES:

- Taillight shiner (has smaller wedge on caudal fin, no black leading edge of dorsal fin, black line on side is thick and thickens behind eye)
- Lake chubsucker (has sub-terminal mouth)
- Bluefin killifish (has rounded tail)

NOTE: Very low frequency in throw traps; caught in Pal Mar



FAMILY: Cyprinidae (minnows)

SPECIES:

Notropis petersoni

COMMON NAME:

Coastal shiner

ENP CODE: 30

GENUS-SPECIES CODE:

NOTPET

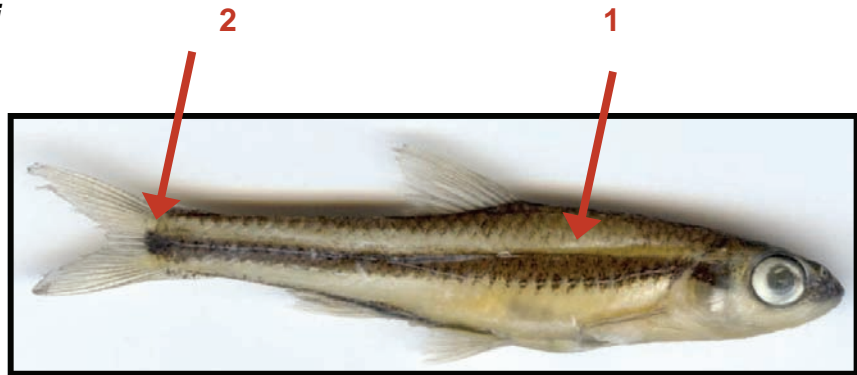
DESCRIPTION:

- Thick black line down body that thickens behind eye (1)
- Emarginate tail
- Beak-like mouth
- Small black wedge on caudal fin base (2)
- Black-edged scales lined with black only above black line
- Anal rays lined with black

SIMILAR SPECIES:

- Taillight shiner (has larger spot on caudal fin, black leading edge of dorsal fin, and black line on side is thin and even)
- Lake chubsucker (chubsucker has sub-terminal mouth)
- Bluefin killifish (has rounded tail)

NOTE: Very low frequency in throw traps; often caught in Pal Mar



FAMILY: Ictaluridae (North American freshwater catfish)

SPECIES:

Ameiurus natalis

COMMON NAME:

Yellow bullhead

ENP CODE: 11

GENUS-SPECIES CODE:

AMENAT

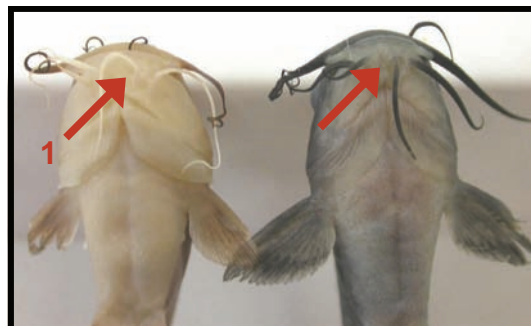
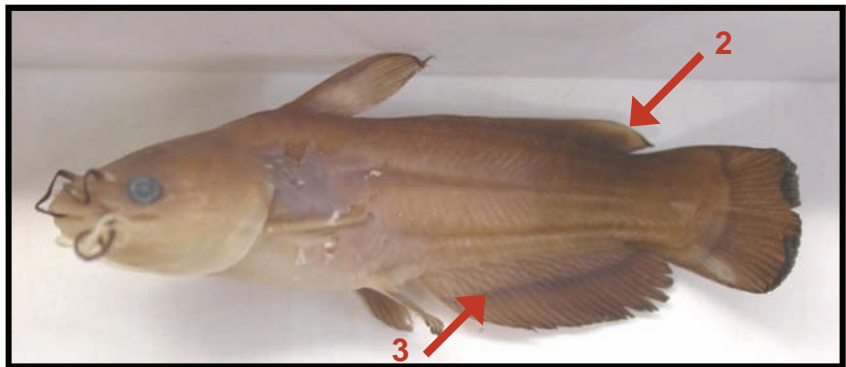
DESCRIPTION:

- 4 pairs of barbels, white or yellow chin barbels (1)
- Has free adipose fin (between dorsal and caudal fins) (2)
- Long anal fin, often dark stripe in middle (3)
- Caudal fin straight or rounded

SIMILAR SPECIES:

- Brown bullhead
- Brown hoplo, Channel catfish, Orinoco sailfin catfish, Walking catfish
- Tadpole madtom

NOTE: HANDLE WITH CARE, VENOMOUS FIN SPINES! Low frequency in throw traps; found throughout



Yellow (L) and Brown (R) Bullheads

FAMILY: Ictaluridae (North American freshwater catfish)

SPECIES:

Ameiurus nebulosus

COMMON NAME:

Brown bullhead

ENP CODE: 48

GENUS-SPECIES CODE:

AMENEB

DESCRIPTION:

- 4 pairs of barbels, dusky or black chin barbels (1)
- Has free adipose fin (between dorsal and caudal fins) (2)
- Long anal fin
- Strongly sloping pre-dorsal region
- Caudal fin straight or rounded, slightly notched
- Black or brown mottling or spots on body

SIMILAR SPECIES:

- Yellow bullhead
- Brown hoplo, Channel catfish, Orinoco sailfin catfish, Walking catfish
- Tadpole madtom

NOTE: HANDLE WITH CARE, VENOMOUS FIN SPINES! Very low frequency in throw traps



SPECIES:

Noturus gyrinus

COMMON NAME:

Tadpole madtom

ENP CODE: 37

GENUS-SPECIES CODE:

NOTGYR

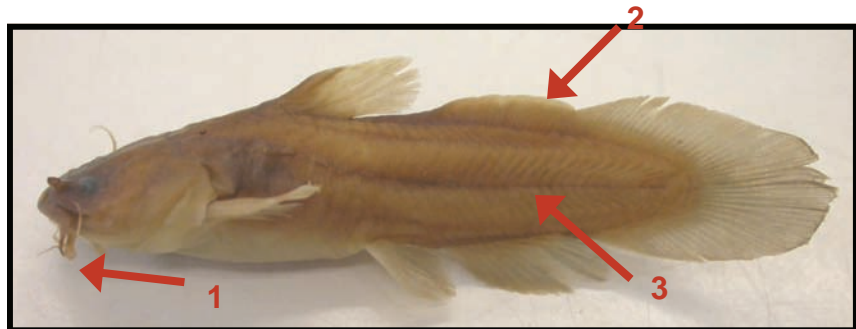
DESCRIPTION:

- 4 pairs of barbels (1)
- Adipose fin continuous with caudal fin (2)
- Chubby body
- Dark veinlike line along side (3)
- Caudal fin rounded

SIMILAR SPECIES:

- Yellow and brown Bullheads
- Brown hoplo, Channel catfish, Orinoco sailfin catfish, Walking catfish

NOTE: HANDLE WITH CARE, VENOMOUS FIN SPINES! Low frequency in throw traps; found throughout



FAMILY: Clariidae (airbreathing catfish)

(non-indigenous)

SPECIES:

Clarias batrachus

COMMON NAME:

Walking catfish

ENP CODE: 60

GENUS-SPECIES CODE:

CLABAT

DESCRIPTION:

-Long dorsal fin and anal fin

-Rounded caudal fin

-4 pairs of barbels (1)

SIMILAR SPECIES:

-Yellow and Brown Bullheads

-Brown hoplo

-Channel catfish

-Orinoco sailfin catfish

NOTE: Rare in throw traps



FAMILY: Callichthyidae (Callichthyid armored catfishes)

(non-indigenous)

SPECIES:

Hoplosternum littorale

COMMON NAME:

Brown hoplo

ENP CODE: 90

GENUS-SPECIES CODE:

HOPLIT

DESCRIPTION:

-Hard, armor-like exterior

-4 pairs of barbels (1)

-Has adipose fin (between dorsal and caudal fins) with spine at front (2)

SIMILAR SPECIES:

-Yellow and Brown Bullheads

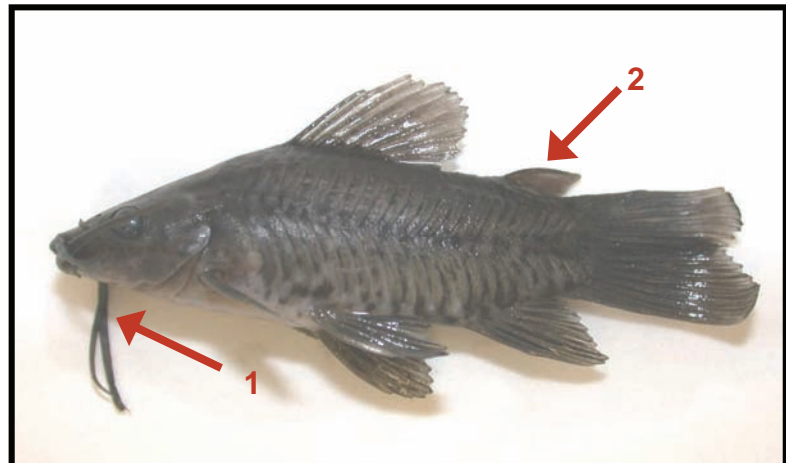
-Tadpole Madtom

-Channel catfish

-Orinoco sailfin catfish

-Walking catfish

NOTE: Low frequency in throw traps



FAMILY: Loricariidae (South American armored catfishes)
(non-indigenous)

SPECIES:

Pterygoplichthys multiradiatus

COMMON NAME:

Orinoco sailfin catfish

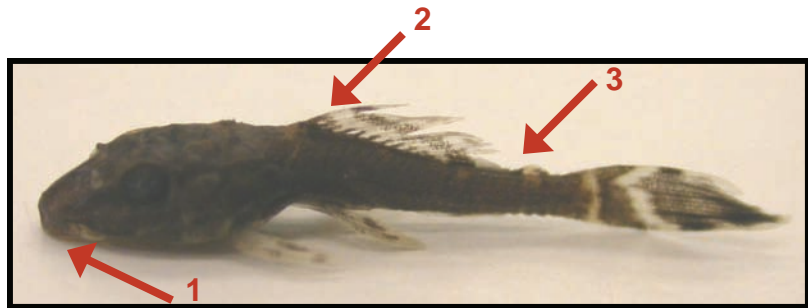
ENP CODE: 99

GENUS-SPECIES CODE:

PTEMUL

DESCRIPTION:

- Bony plates cover body
- 1 pair of barbels (1)
- Sucking lips
- Spine at front of dorsal fin (2)
- Has adipose fin, with spine at front (3)



SIMILAR SPECIES:

- Brown hoplo, Channel catfish, Walking catfish
- Yellow and Brown Bullheads
- Tadpole Madtom

NOTE: Rare in throw traps

FAMILY: Aphredoderidae (Pirate perch)

SPECIES:

Aphredoderus sayanus

COMMON NAME:

Pirate perch

ENP CODE: 87

GENUS-SPECIES CODE:

APHSAY

DESCRIPTION:

- Large head, mouth
- Anus and urogenital openings between gill membranes in adult, in front of anal fin in juveniles
- Dark suborbital bar (1)
- Dark bar on caudal fin base (2)
- Square, barely notched caudal fin



SIMILAR SPECIES:

- Flagfish
- Everglades pygmy sunfish

NOTE:

Low frequency in throw traps, found throughout

FAMILY: Fundulidae (topminnows)

SPECIES:

Adinia xenica

COMMON NAME:

Diamond killifish

ENP CODE: 15

GENUS-SPECIES CODE:

ADIXEN

DESCRIPTION:

- Pointed head, upper profile-concave
- Banded



SIMILAR SPECIES:

- Mosquitofish

NOTE: Very low frequency in throw traps; found in Taylor Slough; often in brackish water

SPECIES:

Fundulus chrysotus

COMMON NAME:

Golden topminnow

ENP CODE: 8

GENUS-SPECIES CODE:

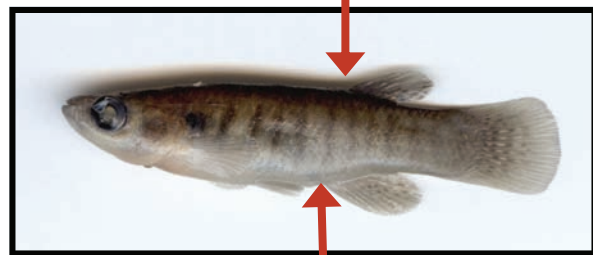
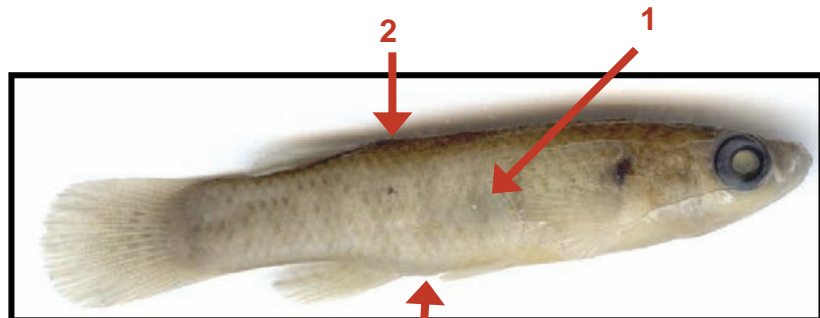
FUNCHR

DESCRIPTION:

- Sometimes light to dark bands on side (males) (1)
- Rounded caudal fin
- Dorsal fin starts behind the start of the anal fin (2)

SIMILAR SPECIES:

- Marsh killifish (has distinct bands, black spot on dorsal fin, and anal and dorsal fins origins equal)
- Seminole killifish
- Mosquitofish (when small)



FAMILY: Fundulidae (topminnows)

SPECIES:

Fundulus confluentus

COMMON NAME:

Marsh killifish

ENP CODE: 4

GENUS-SPECIES CODE:

FUNCON

DESCRIPTION:

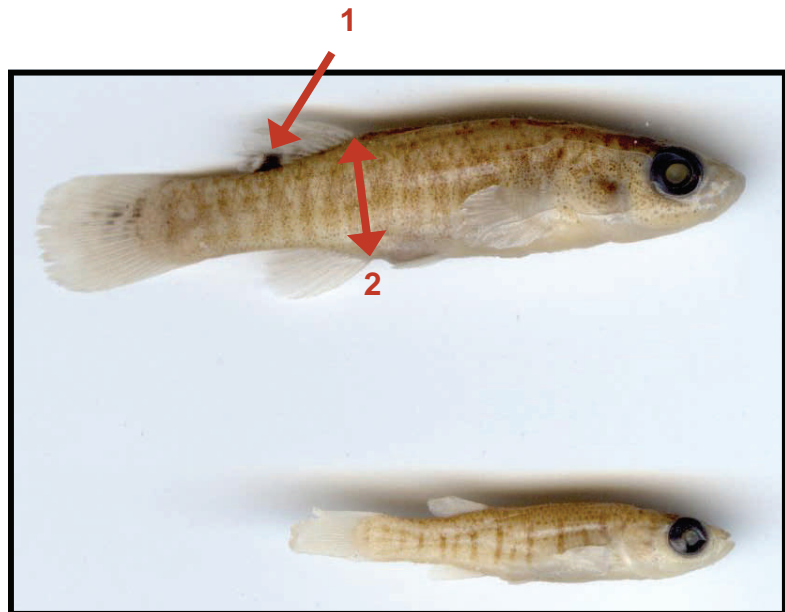
- Distinct dark bands on side (dark bars for females and juveniles, light bars for males)
- Rounded caudal fin
- Large black spot on end of dorsal fin (may be absent in small fish and may be obscured in males) (1)

- Dorsal fin starts directly above the start of the anal fin (2)

- All fins are speckled

SIMILAR SPECIES:

- Golden topminnow (dorsal fin starts behind start of anal fin and does not have black spot on dorsal fin)
- Seminole killifish



SPECIES:

Fundulus lineolatus

COMMON NAME:

Lined topminnow

ENP CODE: 63

GENUS-SPECIES CODE:

FUNLIN

DESCRIPTION:

- 6-8 black stripes on side for female
- 11-15 dark vertical bars on side for male
- Black suborbital bar

SIMILAR SPECIES:

- Mosquitofish (has crosshatched pattern, black spots on dorsal and caudal fins)

NOTE: Very low frequency in throw traps; found in Pal Mar



FAMILY: Fundulidae (topminnows)

SPECIES:

Fundulus seminolis

COMMON NAME:

Seminole killifish

ENP CODE: 34

GENUS-SPECIES CODE:

FUNSEM

DESCRIPTION:

-Dorsal fin origin in front of anal fin origin (1)

-15-20 faint bars on females and juveniles

-Adults often have rows of spots on body

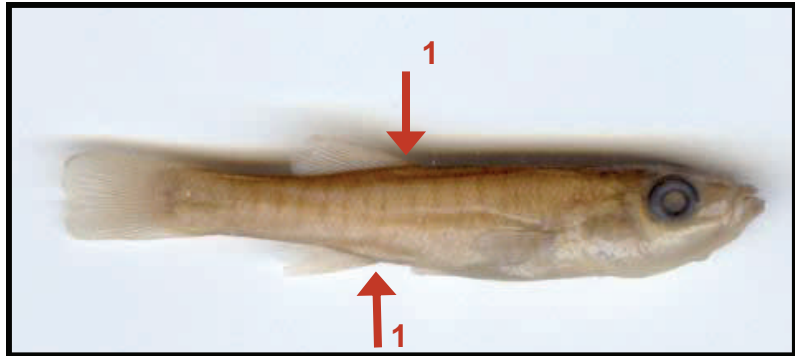
-Longest *Fundulus* species in freshwater

SIMILAR SPECIES:

-Golden topminnow (compare position of dorsal and anal fins)

-Marsh killifish (has fewer, darker bars, compare position of dorsal and anal fins)

NOTE: Very low frequency in throw traps; found all over, but especially Pal Mar



SPECIES:

Leptolucania ommata

COMMON NAME:

Pygmy killifish

ENP CODE: 62

GENUS-SPECIES CODE:

LEMOMM

DESCRIPTION:

-Black spot on caudal peduncle

-Male has 5-7 faint bars on rear half of side

-Female has dark horizontal stripe on side with a black spot on midside

-Dorsal fin origin behind anal fin origin

-Large eye

SIMILAR SPECIES:

-Least killifish

NOTE: Very low frequency; found in Pal Mar



Photo from:
<http://www.nativefish.org/Gallery/Leptolucania-ommata-1.jpg>

FAMILY: Fundulidae (topminnows)

SPECIES:

Lucania goodei

COMMON NAME:

Bluefin killifish

ENP CODE: 7

GENUS-SPECIES CODE:

LUCGOO

SEX: sexable at 18 mm

-Males have black lines in dorsal and anal fins (1)

DESCRIPTION:

-Thick black horizontal line on side, zig-zag pattern, from caudal fin base to snout (2)

-Dorsal fin origin in front of anal fin origin (3)

-Tail rounded

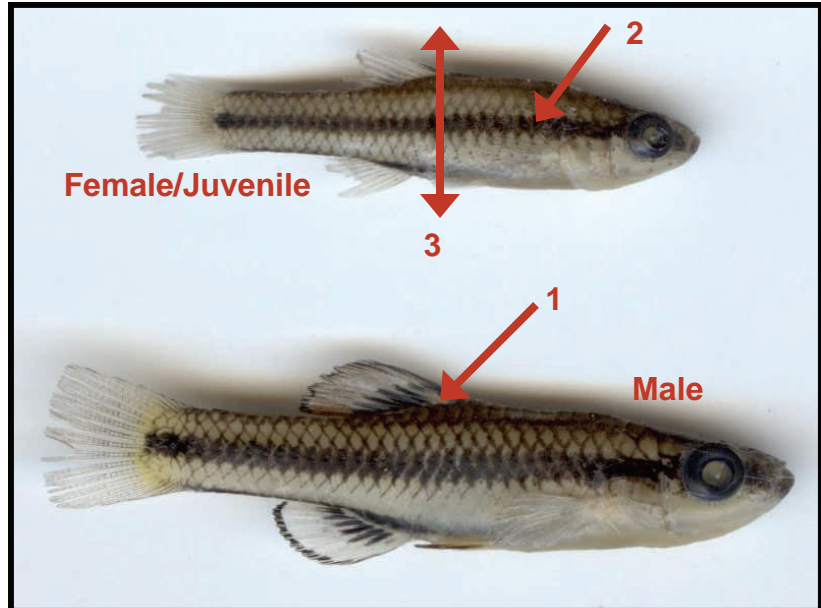
SIMILAR SPECIES:

-Lake chubsucker juvenile

-Largemouth bass juvenile

-Coastal and Taillight shiners

-Rainwater killifish (has no black line on side)



SPECIES:

Lucania parva

COMMON NAME:

Rainwater killifish

ENP CODE: 58

GENUS-SPECIES CODE:

LUCPAR

DESCRIPTION:

-Large dark-edged scales on back and side

-Large males can have black spot at front of dorsal fin

-Dorsal fin origin in front of anal fin origin

SIMILAR SPECIES:

-Bluefin killifish (has dark black stripe down side)

-Pygmy killifish (has large black spot on caudal peduncle on midside or dark bars on side)

-Eastern mosquitofish (has spots on unpaired fins)

NOTE: Very low frequency in throw traps; found in southern ENP, in brackish water



FAMILY: Poeciliidae (livebearers)

(non-indigenous)

SPECIES:

Belonesox belizanus

COMMON NAME:

Pike killifish

ENP CODE: 86

GENUS-SPECIES CODE:

BELBEL

DESCRIPTION:

- Long, thin body
- Long jaws form pointed beak, large teeth
- Top jaw moves up away from body
- Dorsal fin origin well behind anal fin origin
- Several rows of dark spots on side
- Black spot at base of caudal fin (1)
- Rounded caudal fin

SIMILAR SPECIES:

- Gar
 - Chain and Redfin Pickerel
- NOTE:** Very low frequency in throw traps, found in ENP, often in brackish water



Photo from:
http://www.rol.ru/news/nature/animals/fish/img/karp2_1.jpg

SPECIES:

Gambusia holbrooki

COMMON NAME:

Eastern mosquitofish

ENP CODE: 1

GENUS-SPECIES CODE:

GAMHOL

SEX: sexable at 17 mm

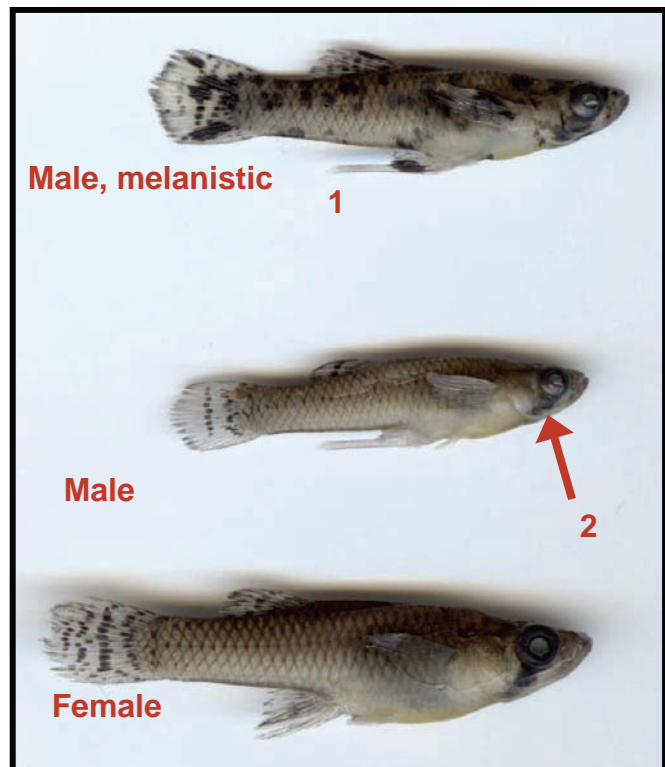
- Males have a gonopodium (1)

DESCRIPTION:

- Dark suborbital bar (2)
- 1-2 rows of black spots on dorsal and caudal fins
- Dark scale outlines produce cross-hatched pattern

SIMILAR SPECIES:

- Golden topminnow (especially when small)
- Sailfin molly (especially when small)
- Pirate perch (especially when small)
- Rainwater killifish



FAMILY: Poeciliidae (livebearers)

(non-indigenous)

SPECIES:

Heterandria formosa

COMMON NAME:

Least killifish

ENP CODE: 6

GENUS-SPECIES CODE:

HETFOR

SEX: sexable at 10 mm

-Males have a gonopodium (1)

DESCRIPTION:

-Series of dark bars on side

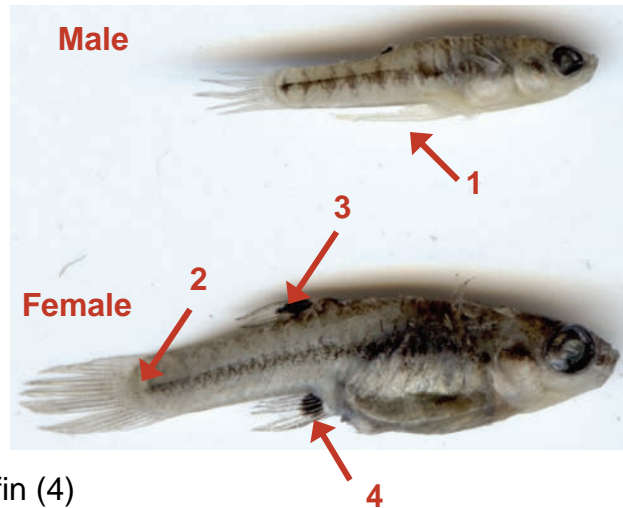
-Black spot on caudal fin base (2)

-Black spot on dorsal fin (3)

-Females have black spot on anal fin (4)

SIMILAR SPECIES:

-Pygmy killifish (lacks spots on dorsal and anal fins, lacks gonopodium, has black spot on side of female)



SPECIES:

Poecilia latipinna

COMMON NAME:

Sailfin molly

ENP CODE: 2

GENUS-SPECIES CODE:

POELAT

SEX: sexable at 18 mm

-Males have a gonopodium (1)

DESCRIPTION:

-Top of head flattened

-Mouth strongly upturned

-No lateral line

-About 5 rows of dark spots

-Anal fin rays connected

SIMILAR SPECIES:

-Mosquitofish (especially when small)

-Pirate perch (especially when small)

-Flagfish



FAMILY: Cyprinodontidae
(pupfishes)

SPECIES:

Cyprinodon variegatus

COMMON NAME:

Sheepshead minnow

ENP CODE: 3

GENUS-SPECIES CODE:

CYPVAR

DESCRIPTION:

- Deep bodied
- 5-8 triangular shaped dark bars on side
- Silver color on preopercle

SIMILAR SPECIES:

- Flagfish (has large black spot on side and no silver color on preopercle)
- Goldspotted killifish



SPECIES:

Floridichthys carpio

COMMON NAME:

Goldspotted killifish

ENP CODE: 59

GENUS-SPECIES CODE:

FLOCAR

DESCRIPTION:

- Upper profile convex
- Bands on side irregular and confined to lower part

SIMILAR SPECIES:

Sheepshead minnow

NOTE: Rare in throw traps; found in brackish water



Photo from:
<http://www.aka.org/sks/tonyvisit.htm>

FAMILY: Cyprinodontidae (pupfishes)

SPECIES:

Jordanella floridae

COMMON NAME:

Flagfish

ENP CODE: 5

GENUS-SPECIES CODE:

JORFLO

SEX: sexable at 20 mm

-Females and juveniles have large dark spot on end of dorsal fin (1)

-Males do not have dorsal fin

spot

DESCRIPTION:

-Large black spot on side (2)

-Long dorsal fin

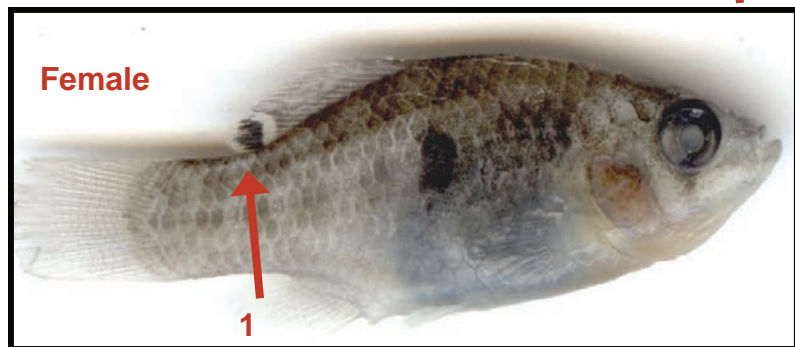
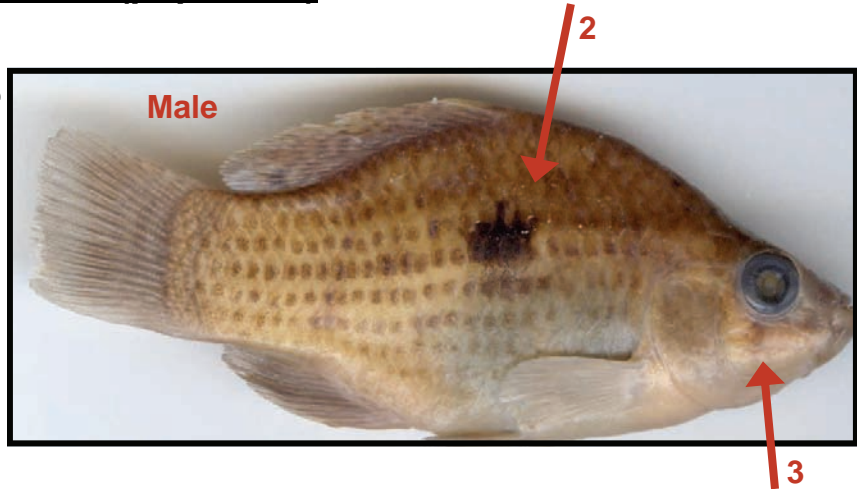
-Dark suborbital bar (3)

SIMILAR SPECIES:

-Sheepshead minnow

-Everglades pygmy sunfish

-Pirate perch juveniles



FAMILY: Atherinidae (silversides)

SPECIES:

Labidesthes sicculus

COMMON NAME:

Brook silverside

ENP CODE: 10

GENUS-SPECIES CODE:

LABSIC

DESCRIPTION:

-Long, beak-like snout

-Black horizontal line down body

-Two dorsal fins

-1st dorsal fin starts directly above start of anal fin (1)

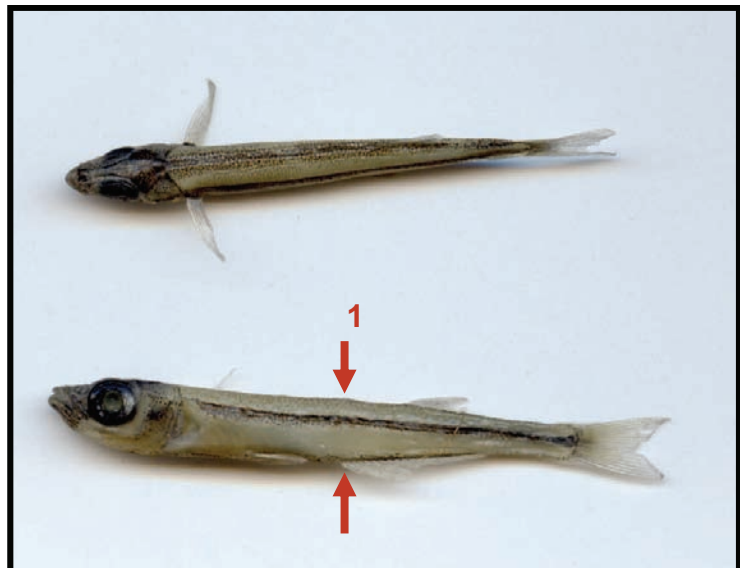
-Long, sickle-shaped anal fin

-Pectoral fins stick out

SIMILAR SPECIES:

-Inland silverside (compare position of 1st dorsal fin)

NOTE: Low frequency in throw traps; found throughout (especially in Pal Mar)



FAMILY: Atherinidae (silversides)

SPECIES:

Menidia beryllina

COMMON NAME:

Inland silverside

ENP CODE: 12

GENUS-SPECIES CODE:

MENBER

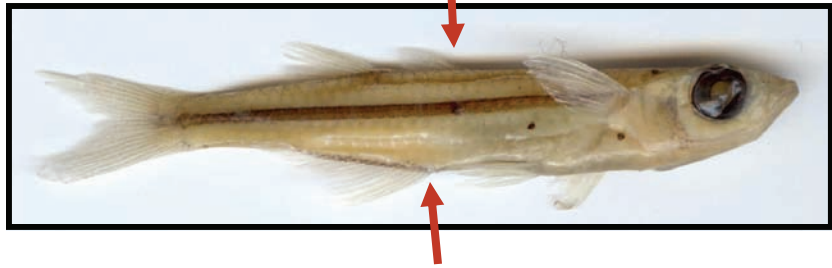
DESCRIPTION:

- Long, beak-like snout
- Black horizontal line down body
- Two dorsal fins
- 1st dorsal fin starts before start of anal fin (1)
- Long, sickle-shaped anal fin
- Pectoral fins stick out

SIMILAR SPECIES:

- Brook silverside (compare position of 1st dorsal fin)

NOTE: Rare in throw traps



FAMILY: Centropomidae (snook)

SPECIES:

Centropomus undecimalis

COMMON NAME:

Snook

ENP CODE: 50

GENUS-SPECIES CODE:

CENUND

DESCRIPTION:

- Very long lateral line, extending to rear of caudal fin
- Anal spines do not reach caudal fin when pressed against body
- Two dorsal fins
- Prominent pelvic fin

SIMILAR SPECIES:

- Other snook species

NOTE: Rare in throw traps

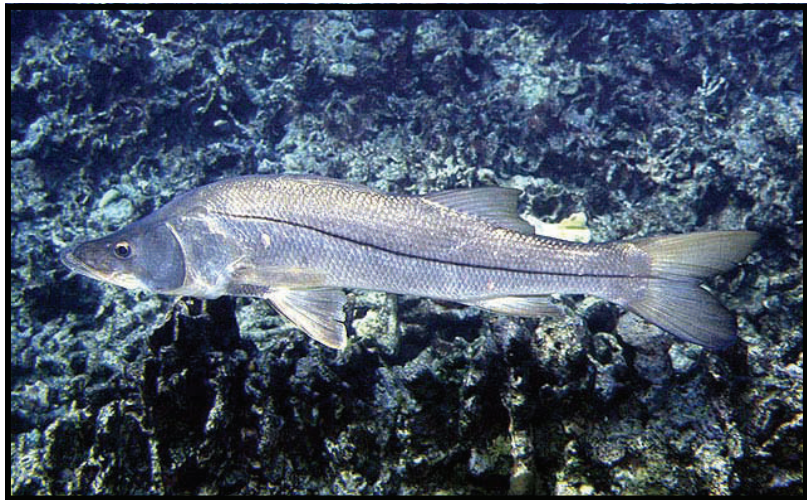


Photo from:
Robert Patzner, <http://fishbase.se/Photos/PicturesSummary.cfm?ID=345&what=species>

FAMILY: Centrarchidae
(sunfishes)

SPECIES:

Ennecanthus gloriosus

COMMON NAME:

Bluespotted sunfish

ENP CODE: 47

GENUS-SPECIES CODE:

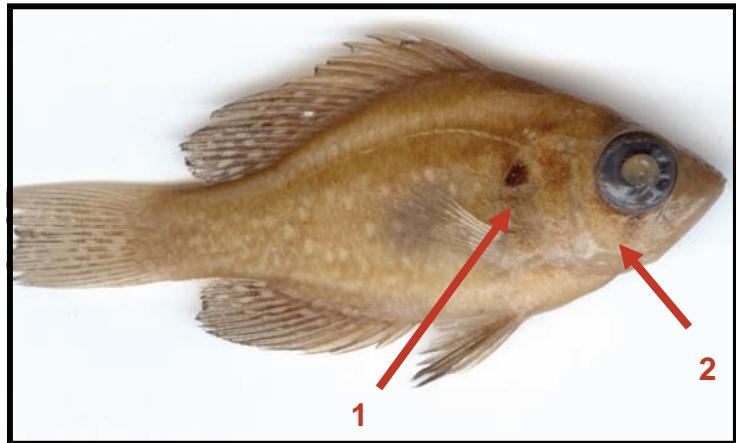
ENNGLO

DESCRIPTION:

- Black spot on operculum (1)
- Dark suborbital bar (may be faint, esp. in small fish) (2)
- Caudal fin less emarginate than other sunfish
- The only sunfish with light spots on unpaired fins

SIMILAR SPECIES:

- All sunfishes of genus *Lepomis* (bluespotted is distinguished by dark suborbital bar)
- Tilapia also have black opercular spot, but always have a spot on the soft dorsal when small.



SPECIES: *Lepomis* spp.

COMMON NAME: Sunfishes

ENP CODE: 19

GENUS-SPECIES CODE: LEPSPP

DESCRIPTION:

- Code used when fish is too small to identify to species level

SIMILAR SPECIES:

- Bluespotted sunfish (bluespotted is distinguished by dark suborbital bar)
- Tilapia also have black opercular spot, but always have a spot on the soft dorsal when small.

FAMILY: Centrarchidae
(sunfishes)

SPECIES:

Lepomis gulosus

COMMON NAME:

Warmouth

ENP CODE: 38

GENUS-SPECIES CODE:

LEPGUL

DESCRIPTION:

-Black spot on operculum (1)

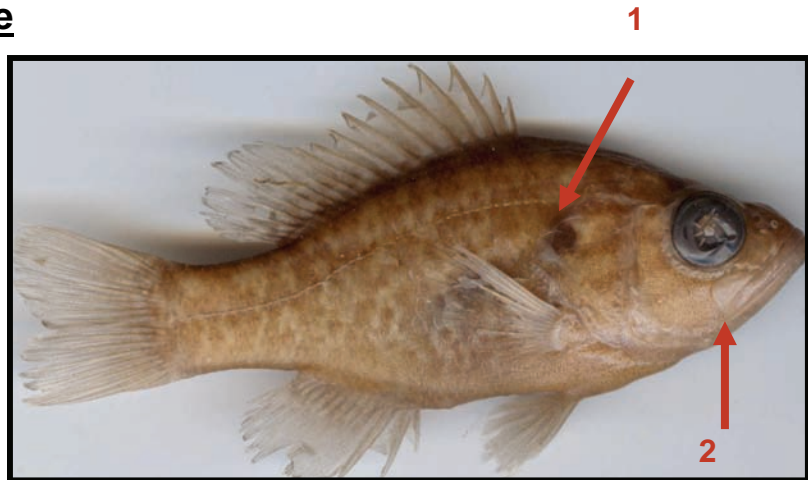
-Mouth is large and extends past anterior portion of eye (2)

-Emarginate tail

SIMILAR SPECIES:

-All sunfishes of genus *Lepomis* and bluespotted sunfish (warmouth is distinguished by very large mouth)

-Tilapia also have black opercular spot, but always have a spot on the soft dorsal when small.



SPECIES:

Lepomis macrochirus

COMMON NAME:

Bluegill sunfish

ENP CODE: 39

GENUS-SPECIES CODE:

LEPMAC

DESCRIPTION:

-Black spot on operculum (1)

-Emarginate tail

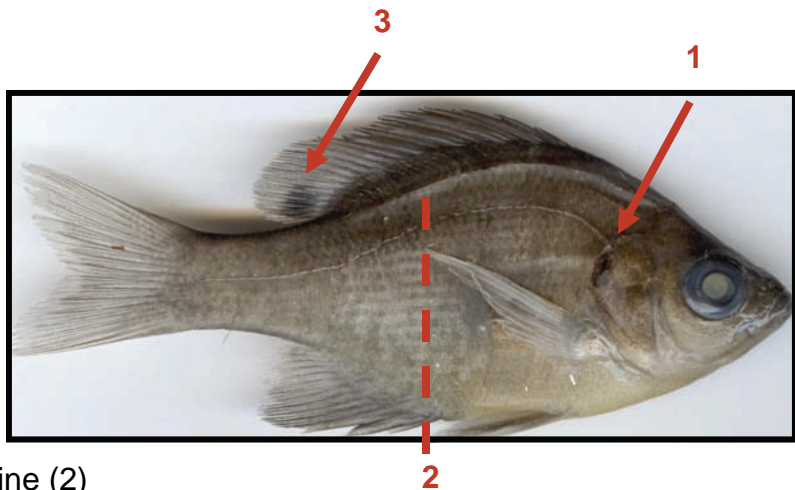
-Pectoral fin long and pointed, reaching to/beyond 3rd anal spine (2)

-Black spot on soft dorsal fin (3)

SIMILAR SPECIES:

-All sunfishes of genus *Lepomis* and bluespotted sunfish (bluegill is distinguished by black spot on soft dorsal fin and long, pointed pectoral fins)

-Tilapia also have black opercular spot, but always have a spot on the soft dorsal when small.



FAMILY: Centrarchidae (sunfishes)

SPECIES:

Lepomis marginatus

COMMON NAME:

Dollar sunfish

ENP CODE: 42

GENUS-SPECIES CODE:

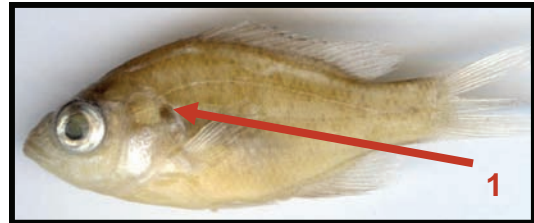
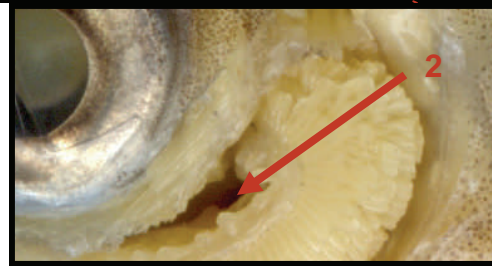
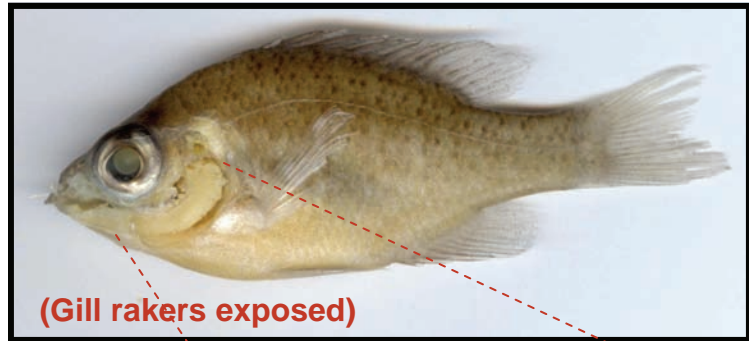
LEPMAR

DESCRIPTION:

- Smallest *Lepomis* in SoFL
- Black spot on opercular flap (1)
- Emarginate tail
- Pectoral fin short and rounded
- Gill rakers short, stubby, not touching each other (2)

SIMILAR SPECIES:

- All sunfishes of genus *Lepomis* and bluespotted sunfish
- Tilapia also have black opercular spot, but always have a spot on the soft dorsal when small.



SPECIES:

Lepomis punctatus

COMMON NAME:

Spotted sunfish

ENP CODE: 41

GENUS-SPECIES CODE:

LEPPUN

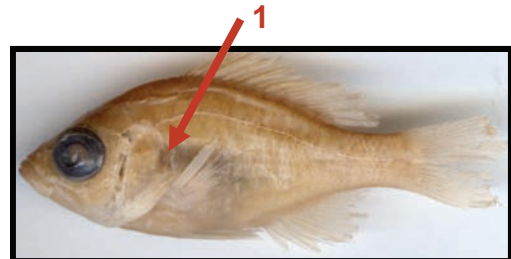
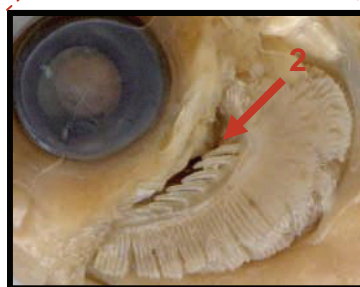
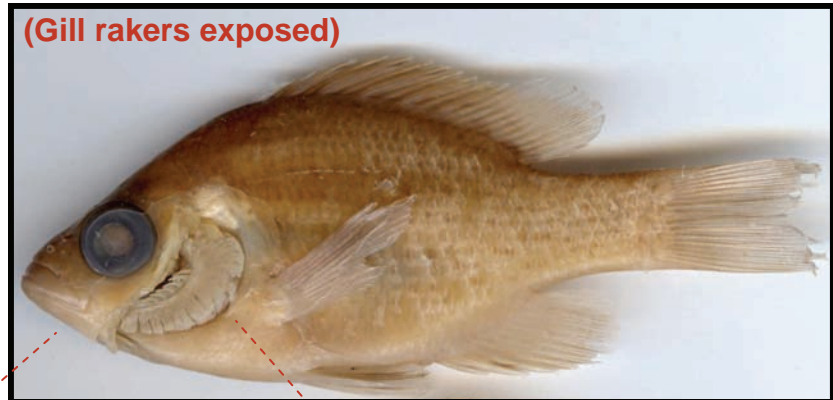
DESCRIPTION:

- Black spot on opercular flap (1)
- Emarginate tail
- Pectoral fin short and rounded
- Gill rakers long and touching each other (2)

SIMILAR SPECIES:

- All sunfishes of genus *Lepomis* and bluespotted sunfish
- Tilapia also have black opercular spot, but always have a spot on the soft dorsal when small.

(Gill rakers exposed)



(Closeup of gill rakers) opercular spot, but always have a spot on the soft dorsal when small.

FAMILY: Centrarchidae (sunfishes)

SPECIES:

Lepomis microlophus

COMMON NAME:

Redear sunfish

ENP CODE: 40

GENUS-SPECIES CODE:

LEPMIC

DESCRIPTION:

- Black spot with red or light margin on opercular flap (1)
- Emarginate tail
- Pectoral fin long & pointed

SIMILAR SPECIES:

- All sunfishes of genus *Lepomis* and bluespotted sunfish (reear is distinguished by red spot on ear flap)
- Tilapia also have black opercular spot. but always have a spot on the soft dorsal when small.
- Bluegill sunfish (has dorsal spot and longer gill rack-



SPECIES:

Micropterus salmoides

COMMON NAME:

Largemouth bass

ENP CODE: 20

GENUS-SPECIES CODE:

MICSAL

DESCRIPTION:

- Large mouth reaching past eye
- Emarginate caudal fin
- Thick, black, splotchy line along body
- Two dorsal fins (1st small)

SIMILAR SPECIES:

- Bluefin killifish
- Lake chubsucker
- Coastal and Taillight shiners

NOTE: Low frequency in throw traps; found throughout (especially in Lake Okeechobee)



FAMILY: Percidae (perches)

SPECIES:

Etheostoma fusiforme

COMMON NAME:

Swamp darter

ENP CODE: 56

GENUS-SPECIES CODE:

ETHFUS

DESCRIPTION:

- Slender, compressed body
- Two dorsal fins
- Dark mottling
- 3 dark caudal spots (1)
- Suborbital bar (2)
- Incomplete lateral line

SIMILAR SPECIES: Clown goby

NOTE: Very low frequency in throw traps, found in Pal Mar



FAMILY: Gerreidae (mojarras)

SPECIES:

Eucinostomus gula

COMMON NAME:

Silver jenny

ENP CODE: 35

GENUS-SPECIES CODE:

EUCGUL

DESCRIPTION:

- Body deep
- Tip of dorsal fin dusky

SIMILAR SPECIES:

-*Eucinostomus harengulus* (tidewater mojarra) (more elongate)

NOTE: Rare in throw traps; usually in brackish water



Photo from:
http://www.mbl.edu/marine_org/flescher/flescher.php?func=detail&id=92

FAMILY: Elassomatidae
(pygmy sunfishes)

SPECIES:

Elassoma evergladei

COMMON NAME:

Everglades pygmy
sunfish

ENP CODE: 46

GENUS-SPECIES CODE:

ELAEVE

DESCRIPTION:

- Uprturned mouth with protruding lower jaw
- Round dorsal fin
- 2 cream-colored spots on caudal fin base
- 7-12 dark bars on side
- May be very dark to black (males), or lighter brown (females)

SIMILAR SPECIES:

- Pirate perch
- Small flagfish



FAMILY: Cichlidae (cichlids)

SPECIES:

*Cichlasoma
bimaculatum*

COMMON NAME:

Black acara

ENP CODE: 52

GENUS-SPECIES CODE:

CICBIM

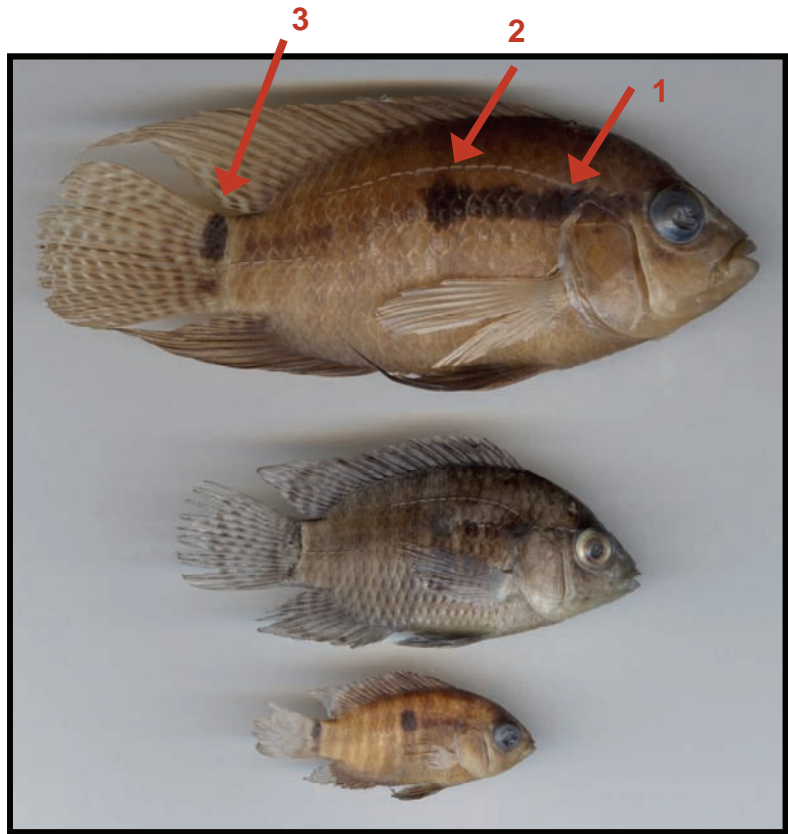
DESCRIPTION:

- Dark blotches along side extend as dark stripe onto opercle (1)
- 6-7 olive or brown bars on side
- Large black spot on side (2)
- Black spot upper caudal fin base (3)

SIMILAR SPECIES:

- Jaguar cichlid

NOTE: Very low frequency in throw traps; found in ENP



SPECIES:

*Cichlasoma
managuense*

COMMON NAME:

Jaguar cichlid

ENP CODE: 92

GENUS-SPECIES CODE:

CICMAN

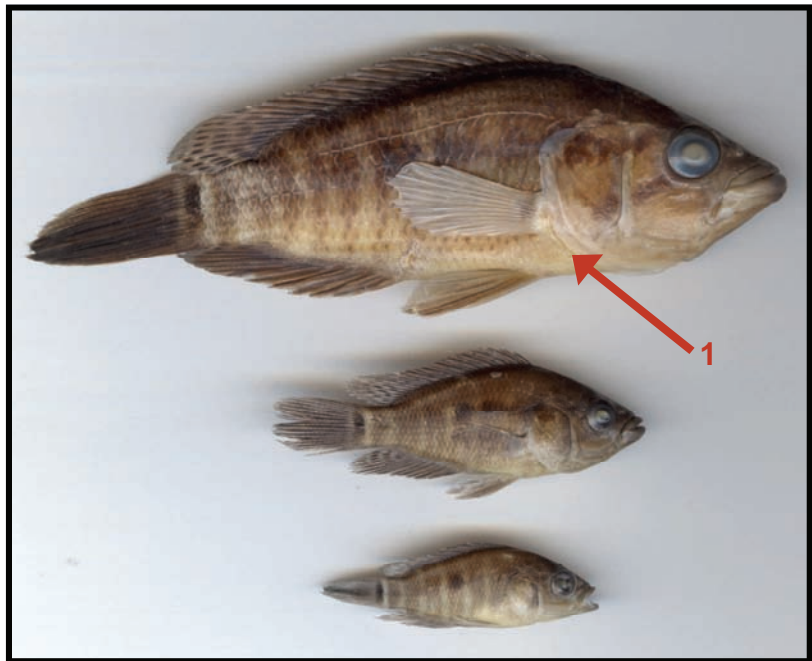
DESCRIPTION:

- Very large oblique mouth
- Lower jaw projects slightly beyond upper jaw
- Distinctive lobe on rear edge of preopercle (1)
- Lots of spots and blotches

SIMILAR SPECIES:

- Black acara
- Warmouth

NOTE: Very low frequency in throw traps



FAMILY: Cichlidae (cichlids)

SPECIES:

Cichlasoma urophthalmus

COMMON NAME:

Mayan cichlid

ENP CODE: 84

**GENUS-SPECIES CODE:
CICURO**

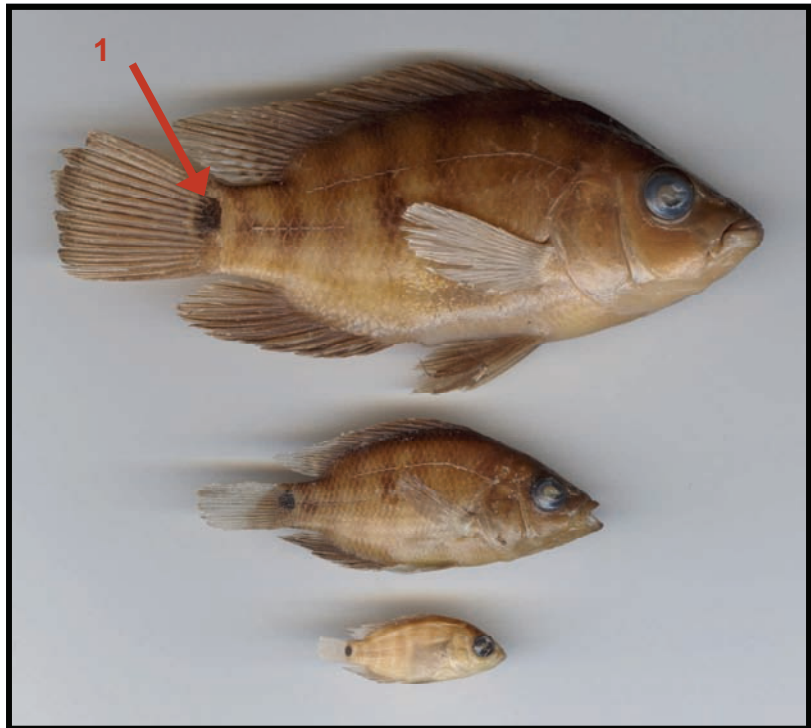
DESCRIPTION:

- 5-7 dark bars on side
- Large black spot on upper caudal fin base (1)
- Pointed head

SIMILAR SPECIES:

- Other cichlids, especially Midas cichlid

NOTE: Occasionally in throw traps; found throughout



SPECIES:

Hemichromis letourneuxi

COMMON NAME:

African jewelfish

ENP CODE: 91

**GENUS-SPECIES CODE:
HEMLET**

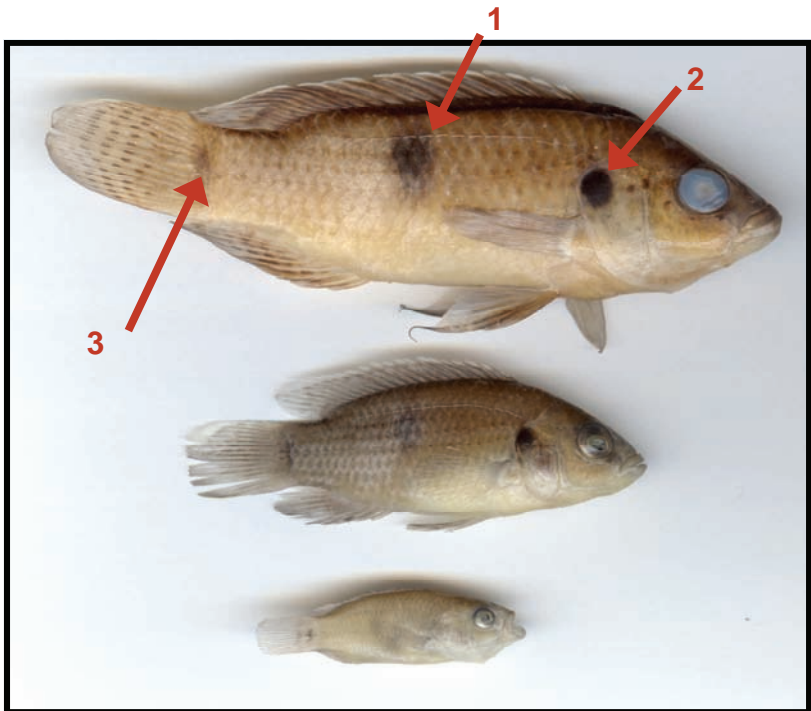
DESCRIPTION:

- Rounded caudal fin
- Rounded end of dorsal fin and anal fin
- Large black blotch on side (1)
- Smaller black blotch on opercular tab (2) and caudal fin base (3)

SIMILAR SPECIES:

- Other cichlids

NOTE: Occasionally in throw traps; often found in ENP (short hydroperiod)



FAMILY: Cichlidae (cichlids)

SPECIES:

Oreochromis aureus

COMMON NAME:

Blue tilapia

ENP CODE: 78

GENUS-SPECIES CODE:

OREAUR

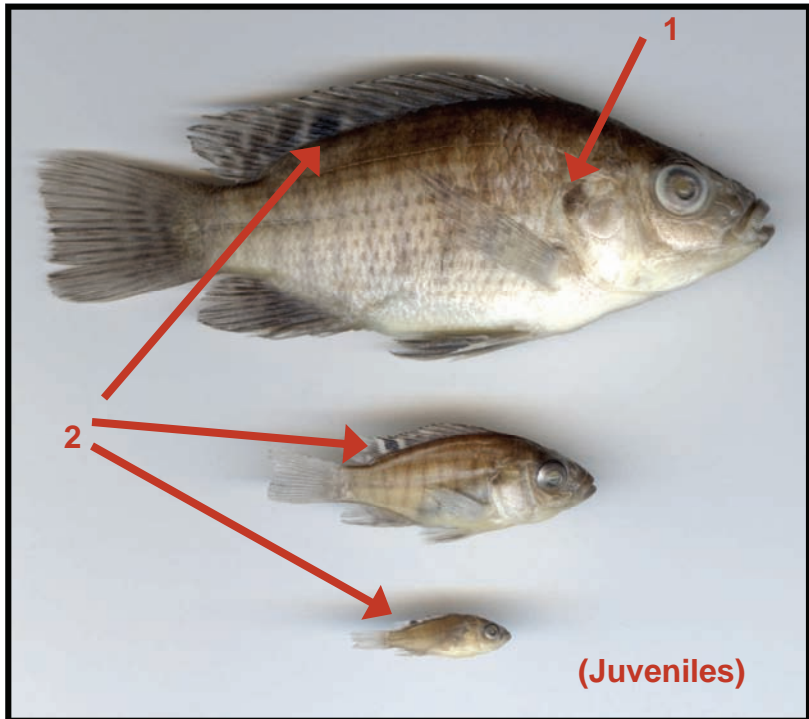
DESCRIPTION:

- Large oblique mouth reaches under eye
- Narrow bars on side
- 12-15 dorsal rays
- Black spot on opercle (1)
- Black spot on dorsal fin (2)

SIMILAR SPECIES:

- Spotted tilapia
- Sunfish also have black opercular spot

NOTE: Very low frequency in throw traps; found in ENP



SPECIES:

Tilapia mariae

COMMON NAME:

Spotted tilapia

ENP CODE: 77

GENUS-SPECIES CODE:

TILMAR

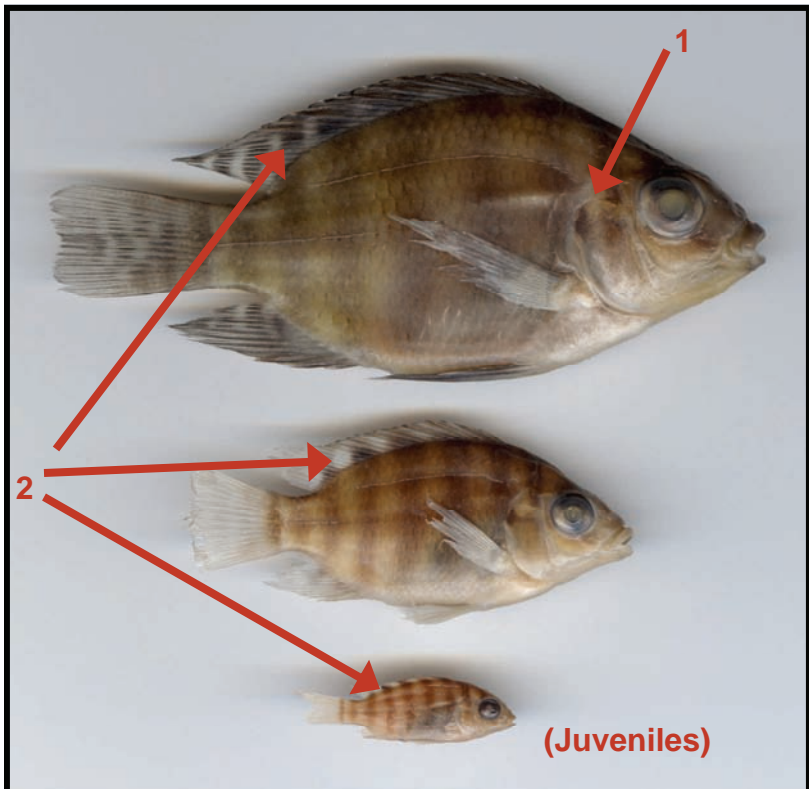
DESCRIPTION:

- 6-9 blotches or bars on side that continue onto dorsal fin
- Black spot on opercle (1)
- Black spot on dorsal fin (2)

SIMILAR SPECIES:

- Blue tilapia
- Sunfish also have black earspot but, except for Bluegill, have no dorsal-fin spot

NOTE: Low frequency in throw traps; found in ENP



FAMILY: Achiridae
(American soles)

SPECIES:

Achirus lineatus

COMMON NAME:

Lined sole

ENP CODE: 16

GENUS-SPECIES CODE:

ACHLIN

DESCRIPTION:

- Eyes and color pattern on right side
- Pectoral fins present
- Body with tufts of dark, hairlike cirri (1)

SIMILAR SPECIES:

- Hogchoker

NOTE: Rare in throw traps

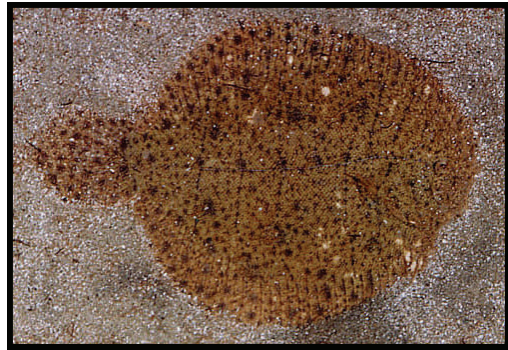


Photo from:
<http://filaman.ifm-geomar.de/Photos/ThumbnailsSummary.php?ID=4256>

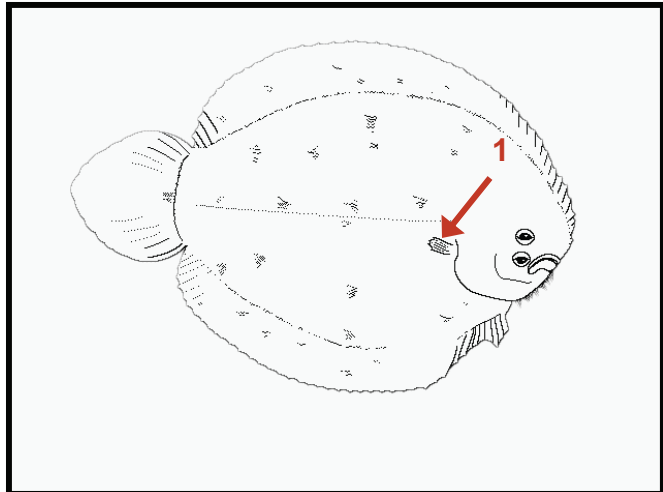


Photo from:
<http://filaman.ifm-geomar.de/Photos/PicturesSummary.cfm?StartRow=4&ID=4256&what=species>

SPECIES:

Trinectes maculatus

COMMON NAME:

Hogchoker

ENP CODE: 36

GENUS-SPECIES CODE:

TRIMAC

DESCRIPTION:

- Eyes and color pattern on right side
- Pectoral fins absent
- Scattered hairlike cirri, not in tufts or patches
- Dark brown, with darker brown bars, sometimes spotted

SIMILAR SPECIES:

- Lined sole

NOTE: Rare in throw traps



**AN ARTIFICIAL KEY TO JUVENILE
SUNFISHES OF THE GENUS *LEPOMIS*
FROM SOUTHERN FLORIDA**

Obtaining accurate identifications of juvenile sunfishes (genus *Lepomis*) has posed a problem in southern Florida. Five species of *Lepomis*, with juveniles of similar appearance, occur within this area. Identification difficulties result from the fact that the identifying characters of the adults are less apparent in the immature forms.

We examined several hundred specimens of the five *Lepomis* species, both living and preserved, while constructing this key. It has since been used satisfactorily by a number of workers and is helpful in identifying juveniles that exceed 10 mm SL. We have included the bluespotted sunfish, *Enneacanthus gloriosus*, in the key because of its superficial similarity to juvenile *Lepomis* spp.

KEY

- 1a. Tail rounded, dark suborbital bar present; light spots present on unpaired fins
..... *Enneacanthus gloriosus*.
- 1b. Tail slightly emarginate, no suborbital bar present; no spots on unpaired fins.....
..... 2 (*Lepomis* spp.)
- 2a. Maxillary reaching to middle of orbit..... *L. gulosus*
- 2b. Maxillary reaching only to anterior portion of orbit..... 3
- 3a. Pectoral fin long and pointed, reaching to and beyond the third anal spine 4
- 3b. Pectoral fin short and rounded, not reaching to the third anal spine 5
- 4a. Opercular spot black to margin; gill rakers long and slender; black spot on posterior
portion of the dorsal fin..... *L. macrochirus*
- 4b. Opercular spot with a red or light margin; gill rakers shorter and slightly thicker; no spot on
posterior portion of the dorsal fin..... *L. microlophus*
- 5a. Body and subopercle with dark specks; opercular spot stiff; gill rakers short, but each
touches the raker below *L. punctatus*
- 5b. Body with a few brownish specks, subopercle unspotted; opercular spot flexible; gill rakers
very short and stubby, not touching one another *L. marginatus*

Sunfish identification key from Loftus and Kushlan (1987).



United States Department of the Interior

NATIONAL BIOLOGICAL SURVEY

7920 N.W. 71st Street
Gainesville, Florida 32606



1 October 1993

Dear Colleague:

Enclosed is a key to the cichlid fishes of Florida. This key was developed after conversations with many biologists in the state who had experienced difficulty trying to distinguish morphologically similar (most cichlids!!) species. This key may also be of use in identifying cichlids beyond the state of Florida, depending on the species introduced in your area. Please let us know if you experience any problems using the key. If you encounter a cichlid that does not "key out" under any couplet of the key please save it (freeze or preserve in formalin) and contact us as we would be very interested in seeing the specimen.

Please Note - As of 1 October 1993 our research center was removed from the US Fish and Wildlife Service and placed in the new Interior Department agency, the National Biological Survey. Our address, phone and FAX numbers are the same. This realignment will result in a change in our research direction in the coming years, a change which we find refreshing.

Bill Smith-Vaniz and Jim Williams

PS-I have also enclosed a copy of a publication on conservation of freshwater mussels that may be of interest. JDW.

KEY TO CICHLID FISHES OF FLORIDA

(* Species previously reported from Florida that were eradicated or apparently failed to become permanently established.)

- 1a. Dorsal fin with spines longest anteriorly with succeeding spines becoming gradually shorter except ultimate spine abruptly longer, so that fin margin appears deeply notched just anterior to soft portion; longitudinal scale rows >60 2
- 1b. Dorsal fin with posterior spines of approximately equal length, so that the fin margin does not appear deeply notched just anterior to soft portion; longitudinal scale rows <40 3
- 2a. Adults and large juveniles without black markings or blotches on head behind eye; longitudinal scale rows 68-78
..... *Cichla ocellaris*
- 2b. Adults and large juveniles with black markings or blotches on head behind eye; longitudinal scale rows 108-127
..... *Cichla temensis*
- 3a. Anal fin III, 14-16; at least proximal half of all unpaired fins densely scaled; 3 scale rows typically present between upper and lower lateral lines *Astronotus ocellatus*
- 3b. Anal fin III-X, 6-12; fin squamation not as above; 2 scale rows between upper and lower lateral lines 4
- 4a. Anal-fin spines 3-4¹ 5
- 4b. Anal-fin spines 5-11 14
- 5a. Anterior half of cheek naked (Fig. 1A); prominent flattened, lobelike expansion on upper limb of first gill arch
..... * *Geophagus surinamensis*
- 5b. Cheek completely scaled (Figs. 1B-C); no prominent flattened, lobelike expansion on upper limb of first gill arch 6
- 6a. Anal-fin spines 4-6; dark basicaudal blotch positioned mostly above an imaginary line through middle of caudal fin; opercle without a conspicuous dark spot or blotch on posteriodorsal margin 7
- 6b. Anal-fin spines 3; dark basicaudal blotch, if present, not positioned mostly above an imaginary line through middle of caudal fin; opercle with a conspicuous dark spot or blotch 8
- 7a. Dark subocular spot present; anal-fin spines typically 4 (5 in 6% of 310 specimens examined); caudal fin with a series of small dark spots that give fin a banded pattern; longitudinal scale rows 23-25, rarely 25 *Cichlasoma bimaculatum*
- 7b. No dark subocular spot; anal-fin spines 4-6, rarely 4; caudal fin without a series of small dots that give fin a banded pattern; longitudinal scale rows 26-29 *Cichlasoma cyanoguttatum*

¹*Cichlasoma bimaculatum* and *C. cyanoguttatum* will key out under both sections of couplet 4.

- 8a. Sides with a single dark blotch, approximately diameter of eye, positioned almost or entirely above an imaginary line extending from tip of snout through middle of caudal fin; preopercle with narrow naked margin (Fig. 1B); teeth in jaws conical
 *Hemichromis letourneauxi*
- 8b. Color pattern not as above; preopercle with relatively wide naked margin (Figs. 1C-D); teeth in jaws with notched (bicuspid or tricuspid) crowns (Fig. 2) 9

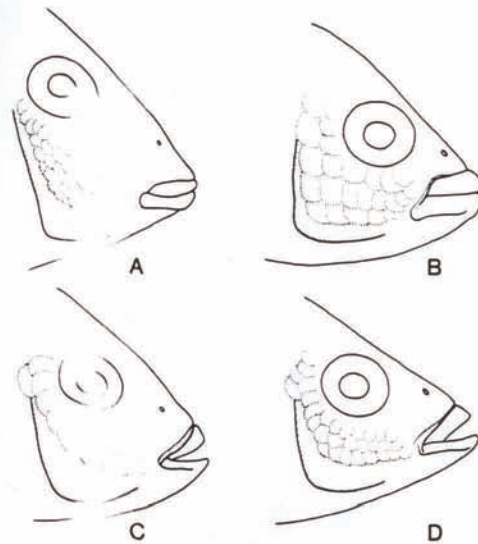


Figure 1. Cheek squamation in selected cichlids (naked margin of preopercle shaded): A, *Geophagus surinamensis*; B, *Hemichromis letourneauxi*; C, *Sarotherodon melanotheron*; D, *Oreochromis mossambicus*.

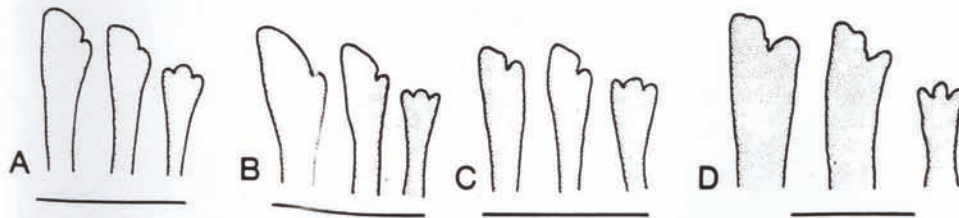


Figure 2. Jaw teeth (two outer and one inner from left lower jaw): A, *Sarotherodon melanotheron*, from a specimen 130 mm SL; B, *Tilapia mariae*, from a fish 135 mm SL, C, *Oreochromis aureus*, from a fish 131 mm SL; D, *Tilapia zillii*, from a fish 130 mm SL. Scale = 1.0 mm.

- 9a. Distal margin of caudal fin emarginate (Fig. 3A); adults with dorsal and caudal fins uniformly pigmented; longitudinal scale rows 24-26 *Sarotherodon melanotheron*
- 9b. Distal margin of caudal fin truncate (Fig. 3B); adults with dorsal and/or caudal fins with spots, bands or contrasting pale margins; longitudinal scale rows 26-30 10

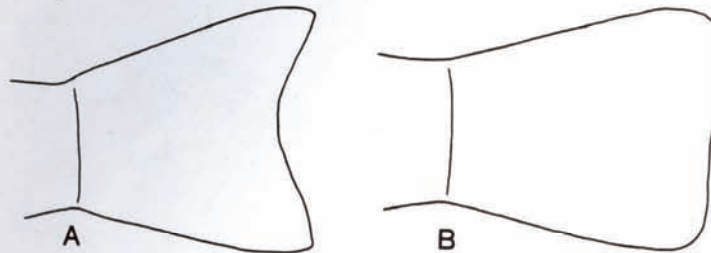


Figure 3. Profile of caudal fin: A, *Sarotherodon melanotheron*; B, *Oreochromis aureus*.

- 10a. First gill arch with 13-26 rakers on lower limb; outer jaw teeth readily moveable 11
- 10b. First gill arch with 8-12 rakers on lower limb; outer jaw teeth teeth immovable or nearly so 13
- 11a. Adults with a row of 5 or 6 round to square-shaped, dark blotches on sides, the first above pectoral fin and the last at caudal-fin base; juveniles with 7 dark bands on sides from opercle to base of caudal fin; circumfrenial caudal peduncle scales 14-16 *Tilapia mariae*.
- 11b. Color pattern of adults not as above; juveniles with 8-10 dark bands on sides from opercle to base of caudal fin; circumfrenial caudal peduncle scales 16-20 (rarely 16) 12
- 12a. First gill arch with 20-26 rakers on lower limb (24-32 total, usually >26); caudal fin of juveniles and frequently adults with indistinct, irregular dusky markings or a dark reticulum with light interstices; sides of adults generally bluish-gray, white on belly, except in darker individuals each scale may have a small dark spot or dusky blotch anteriorly which gives the appearance of rows of markings; breeding males mostly bluish-gray, throat and cheeks light but not distinctly lighter than rest of body; in life, genital papilla translucent, not chalky white *Oreochromis aureus*. 19L
20R
- 12b. First gill arch with 16-22 rakers on lower limb (18-26 total, rarely 26); caudal fin of juveniles and adults without indistinct markings or reticulations; sides of adults with 3 or 4 dark blotches or without any distinct markings; breeding males mostly black except throat and cheeks conspicuously white; in life, genital papilla chalky white *Oreochromis mossambicus* Q

- 13a. Caudal fin with conspicuous alternating dark and pale bands; pectoral fin rays 14-15; total dorsal fin elements 27-28 * *Tilapia zillii*
- 13b. Caudal fin without alternating pale and dark bands; pectoral fin rays 12-13; total dorsal fin elements 24-25 * *Tilapia sparrmanni*
- 14a. Ventral margin of lower lip interrupted by fleshy symphyseal frenum² (Fig. 4A) 15
- 14b. Ventral margin of lower lip continuous, not interrupted by fleshy symphyseal frenum (Figs. 4B-C) 20

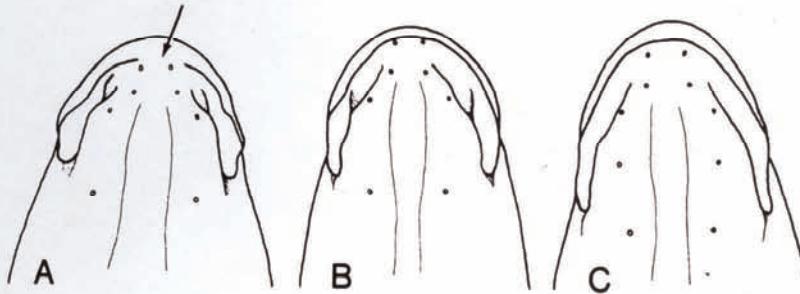


Figure 4. Ventral view of head in selected species of *Cichlasoma* (upper lip not shown; small arrow indicates symphyseal frenum): A, *C. octofasciatum*; B, *C. urophthalmus*; C, *C. salvini*.

- 15a. Anal-fin spines 5-7 16
- 15b. Anal-fin spines 8-11 18
- 16a. Dark subocular spot present; caudal fin with series of small dark spots that give fin a banded pattern *Cichlasoma bimaculatum*
- 16b. No dark subocular spot; caudal fin without series of small dark spots that give fin a banded pattern 17
- 17a. Adults with body and bases of vertical fins with numerous pale spots; anal-fin spines 5 or 6 *Cichlasoma cyanoguttatum*
- 17b. Adults without numerous pale spots, coloration in life variable ranging from uniform gray to orange, sides sometimes with dark bars or with piebald markings; anal-fin spines 6 or 7 (usually 7) *Cichlasoma citrinellum*
- 18a. Upper half of gill cover with large dark blotch; nape crossed by dark diagonal band that usually widens on sides and ends beneath anterior third of pectoral fin ... * *Cichlasoma nigrofasciatum*
- 18b. Upper half of gill cover without large dark blotch; nape not crossed by dark diagonal band that usually widens on sides and ends beneath anterior third of pectoral fin 19

²Fleshy symphyseal frenum variably present or absent in *Cichlasoma citrinellum* which will key out under both sections of couplet 14.

- 19a. Distal margin of caudal fin emarginate; lower half of gill cover with a large dark blotch; dark basicaudal spot centered on an imaginary line through middle of caudal fin; vertical fins of adults without conspicuous pale spots; interrarial membranes of soft dorsal and anal fins naked *Cichlasoma meeki*
- 19b. Distal margin of caudal fin rounded; lower half of gill cover without dark blotch; dark basicaudal spot positioned mostly above an imaginary line through middle of caudal fin; vertical fins of adults with conspicuous pale spots; some interrarial membranes of soft dorsal and anal fins with scales (usually in single series) proximally *Cichlasoma octofasciatum*
- 20a. Black blotch, approximately eye diameter, on shoulder above gill cover; anal-fin spines 7-8 * *Cichlasoma trimaculatum*
- 20b. No black blotch on shoulder above gill cover; anal-fin spines 5-10 21
- 21a. Anal-fin spines 8-10; dark blotches on body forming a lateral stripe that extends to rear margin of eye; mandibular pores 5 (Fig. 4C) *Cichlasoma salvini*
- 21b. Anal-fin spines 5-7; dark blotches on body not forming a lateral stripe that extends to rear margin of eye; mandibular pores 4 (Figs 4A-B) 22
- 22a. Body coloration variable ranging from uniform gray to orange, sometimes with piebald markings; dark body bands, if present, without narrow pale gray or white borders; dark blotch at base of caudal fin, if present, not noticeably blacker than dark bands on body; anal-fin spines 6 or 7 (usually 7); breeding males typically with a swollen nuchal hump *Cichlasoma citrinellum*
- 22b. Body coloration not as above; dark bands always present on body and often with narrow white to pale gray borders, especially dorsally; dark blotch at base of caudal fin noticeably blacker than dark bands on body; anal-fin spines 5 or 6; breeding males without a swollen nuchal hump *Cichlasoma urophthalmus*

Note for Reader

Occurrences are noted for less-than-common fishes. Fish that are marked as “occasional” appear in multiple samples during a single sampling period, but in relatively low numbers. “Low frequency” fish are those that tend to show up once or twice over the course of multiple sampling periods. “Very low frequency” fishes are those that show up only once or twice over the course of a year’s worth of sampling. Rare fishes are those that have been encountered only once or twice in a throw-trap sample ever, if at all. Note that unusual fishes inevitably show up somewhere; just because a fish is less than common does not mean it isn’t in your sample! Also, keep in mind that occurrences are generalized over the entire Everglades sampling domain. Some sites (e.g., Lake Okeechobee, Taylor Slough, and Pal Mar) have their fair share of “very low frequency” fishes.

References:

Loftus W.F., and J.A. Kushlan. 1987. Freshwater fishes of southern Florida. Bulletin of the Florida State Museum, Biological Sciences 31:147-344.

Page, L.M., and B.M. Burr. 1991. A Field Guide to Freshwater Fishes. Houghton Mifflin Company, New York.

Robbins, C.R., and G.C. Ray. 1986. A Field Guide to Atlantic Coast Fishes. Houghton Mifflin Company, New York.

All photos by The Trexler Lab except where noted.