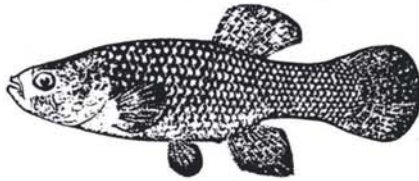


FISH OF THE ESTUARY

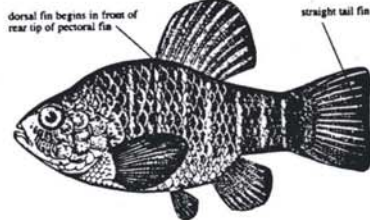
FUNDULUS HETEROCLITUS, Mummichog

Max. 5-6 in.
Most are 3 1/2 - 4 in.



CYPRINODON VARIEGATUS, Sheepshead Minnow

Max 3 in.



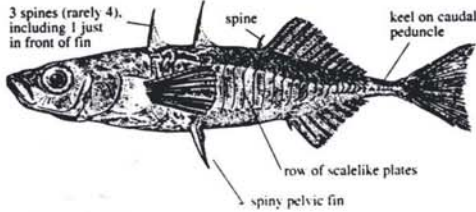
GASTEROSTEUS ACULEATUS, Three-spined stickleback

Has 3 to 5 spines (note: there is also a Two-spined stickleback that has 5-6 bony plates).

Has many bony plates. (More than 6)

Max size 4 in.

Most < 3 in.

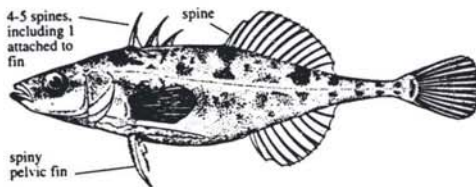


APELTES QUADRACUS, Four-spined stickleback

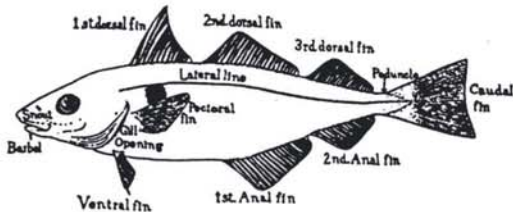
Has 2 to 4 spines.

No bony plates.

1 1/2 - 2 1/2 in.



FISH DIAGRAM

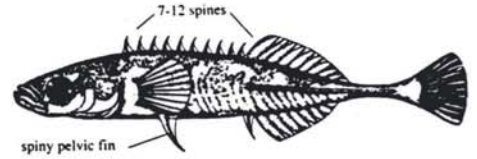


PUNGITUS PUNGITUS, Nine-spined stickleback

Has 7 or more spines

Not more than 3 in.

Most are 2-2 1/2 in.



MENIDIA, Silverside

Up to 5 1/2 in.

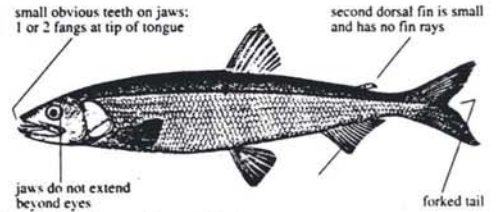
Most are 4-4 1/2 in.



OSMERUS, Smelt

Max. 13-14 in.

Most 7-9 in.

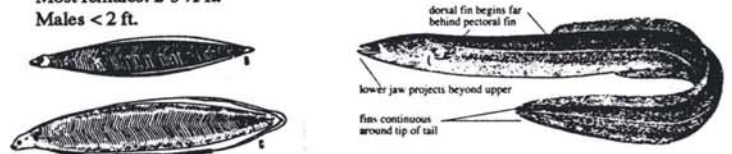


ANGUILLA ROSTRATA, American Eel

Adults: up to 4 Ft.

Most females: 2-3 1/2 ft.

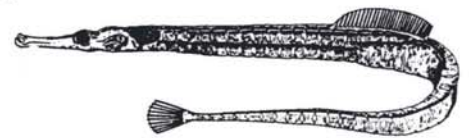
Males < 2 ft.



SYNGNATHUS, Pipefish

Max: 12 in.

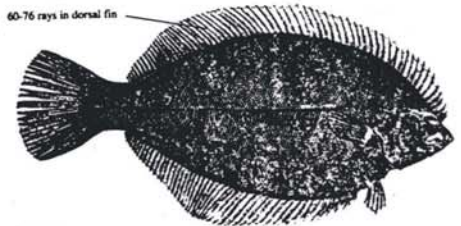
Most are 4 to 8 in.



PLEURONECTES AMERICANUS, Winter Flounder

Max. 23 inches

Most adults are 12-15 inches

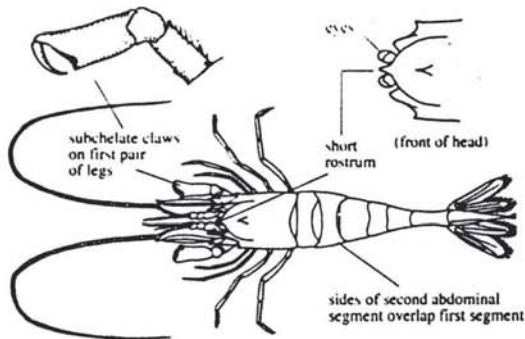


When identifying fish: Look at body shape, and presence and location of fins. For example, Smelt are easily identifiable from Silversides, when you notice that Silversides have two dorsal fins. (See fish diagram to learn fin names). Fish of the same species are often different sizes and colors. *Size and color are generally not good identifying features.*

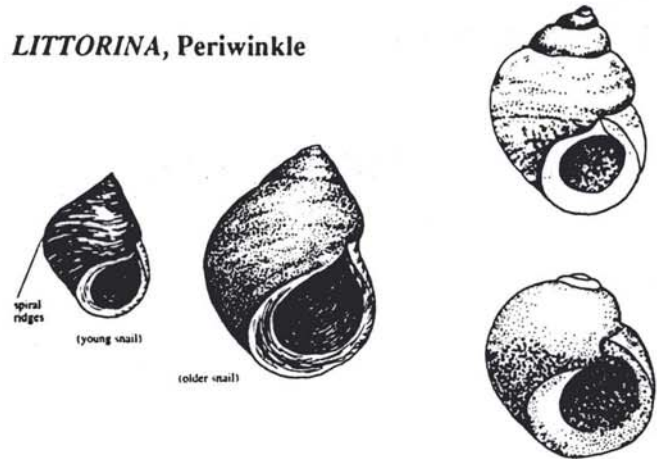
If you are collecting fish in water of low salinity, you may catch fish not found on this chart. On your data form, you may simply label these "freshwater fish." If you have The National Audubon Society Field Guide To New England look in section on freshwater fish to identify other species.

MARINE ANIMALS OF THE ESTUARY

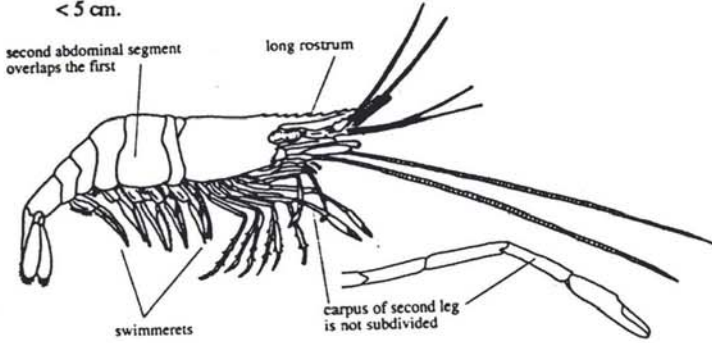
CRANGON SEPTEMSPINOSA, Sand Shrimp
 < 6 cm.



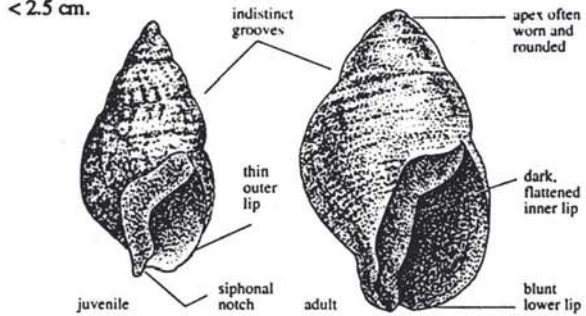
LITTORINA, Periwinkle



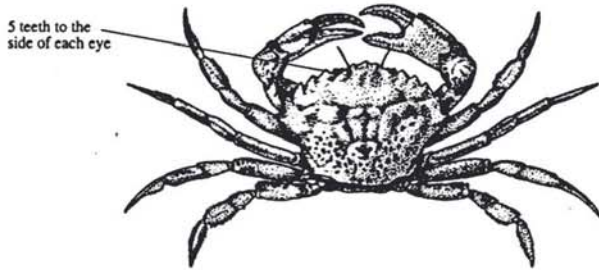
PALAEEMONETES Grass Shrimp
 < 5 cm.



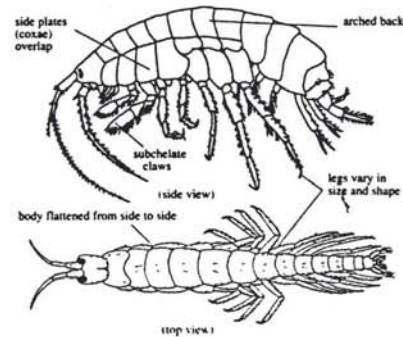
ILYANASSA OBSOLETA, Eastern Mud Snail
 < 2.5 cm.



CARCINUS MAENAS, Green Crab
 shell width < 8 cm.



Typical Gammarid Amphipod



When identifying animals: Look at body shape. For example, Periwinkles are easily identifiable from Mud Snails, when you notice that Periwinkle shells are much more rounded than Mud Snail shells. Animals of the same species are often different sizes and colors. *Size and color are generally not good identifying features.*

If you are collecting animals in water of low salinity, you may catch animals not found on this chart. On your data form, you may simply label these "freshwater animal." If you have The National Audubon Society Field Guide To New England look in section on freshwater animals to identify other species.



Common Plants of the Salt Marsh Identification Key

By Elizabeth Duff

1997

Please note: not all salt marsh plants are included in this key.

You may want to adapt this key, as you find additional species on your site

- 1a Plant has long grasslike leaves. (Leaves grow straight to a point.)8
- 1b Leaves are not straight and grasslike, or plant does not have a recognizable leaf.....2

- 2a Plant is fleshy. (If you squeeze a leaf or segment, your fingers get wet from the stuff inside)3
- 2b Plant is not fleshy.4



- 3a Plant does not have an obvious leaf.....Common Glasswort (*Salicornia europaea*)
- 3b Plant has numerous small leaves.....Sea blite (*Suaeda*)

- 4a Plant has a twig-like brown stem, and is a small shrub.....Marsh Elder (*Iva frutescens*)
- 4b Plant does not have a woody stem.....5



- 5a Leaves are triangular..... Orach (*Atriplex*)
- 5b Leaves are not triangular.....6



- 6a Plant grows straight with leaves growing along stem.....7
- 6b Leaves grow at the base of the plant. The top branches and grows many tiny lavender flowers.....Sea Lavender (*Limonium carolinianum*)

- 7a Plant grows single stem. Leaf is narrow, then widens, then narrows again to a rounded point. Plant grows golden yellow flowers in the fall.Seaside goldenrod
.....(*Solidago sempervirens*)

- 7b Stems are single or forked. Leaf is straight and narrow, tapering to a point. Plant grows purple daisy-shaped flowers in the fall Aster (*Aster*)



- 8a Plant stem is triangular. The plant grows flowers that resemble miniature pine cones.
.....Saltmarsh Bulrush (*Scirpus*)
- 8b Stem is not triangular.....9

- 9a Leaves grow only from the base of the plant.10
- 9b Leaves grow along the stem.....11



- 10a Leaf grows ¼ to ½ inch wide, and up to 6 feet high. Plant grows brown spikes at the top.....Narrow leaved cattail (*Typha angustifolia*)
- 10b Plant leaf is less than ¼ inch wide, and grows numerous small greenish flowers on a spike. Plant grows from 8-32 inches tall. Seaside Arrow Grass (*Triglochin maritimum*)



11a Plant has numerous leaves growing all the way up the stem.....12

* 11b Plant has few leaves (4 or less) and/or leaves grow only part way up the stem.....13

*Please note: Salt marsh hay may have more than 4 leaves, but the leaves are widely spaced.

12a Plant leaf is wide, greater than 1/2 inch. Stem is round and hollow. Plant grows a large silky plume at the top. Plant can be 6 1/2- 14 feet high... Phragmites (*Phragmites australis*)

12b Plant leaf is narrow. (Less than 1/8 inch.) Plant has many leaves growing in two directions, like a lot of V's on the stem. Leaves are light green, and can be flattened out.

..... Spikegrass (*Distichlis spicata*)



12c Plant leaf is about 1/4- 1/2 inch wide. Plant grows 1-8 feet high. Plant grows tall close to water. Leaves are dark green or yellowish green Leaves feel rough. Plant flower and seeds grow hugging the center of the plant. Saltmarsh cordgrass (*Spartina alterniflora*)

13a Plant stem is, solid, and round. Flower/seed pods are round, and form from the side of the stem, rather than at the very end.Black Grass (*Juncus gerardi*)



13b Live plant stem is generally green and jointed, Plant flower and seeds grow on the very end of the stem.....14

14a Plant leaf is about 1/4- 1/2 inch wide. Plant grows 1-8 feet high. Plant grows tall close to water. Leaves are dark green or yellowish green Leaves feel rough. Plant flower and seeds grow hugging the center of the plant. Saltmarsh cordgrass (*Spartina alterniflora*)

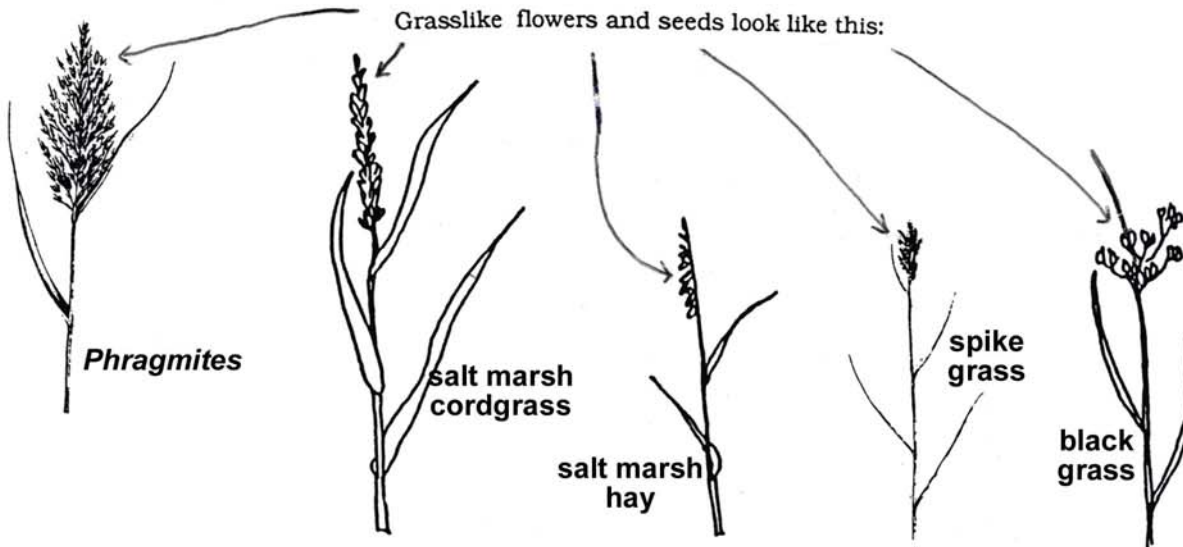


12b Leaf is extremely skinny (It looks like it might fit through a needle eye.) Its sides curve inward. Plant flower and seeds grow on one side of a stalk, (like the teeth on a comb.)

.....Saltmeadow cordgrass (*Spartina patens*)

Additional saltmarsh/brackish water plants not included in this key are: Purple loosestrife, marsh fern, silverweed, amaranth, and numerous upland grasses, and upland species.

Grasslike flowers and seeds look like this:





-Triangular Stem

Saltmarsh Bulrush
Scirpus robustus

- triangular stem
- leaves 1/2 " wide



Saltmarsh Sedge
Carex paleacea

- plant grows 1 -3 feet tall
- grasslike leaves 1/10 - 1/3 inch wide
- seed heads look evenly spaced apart
- seed heads droop to one side



Saltmarsh Cordgrass
Spartina alterniflora

- long tapered leaves
- seed heads grow close to main stem



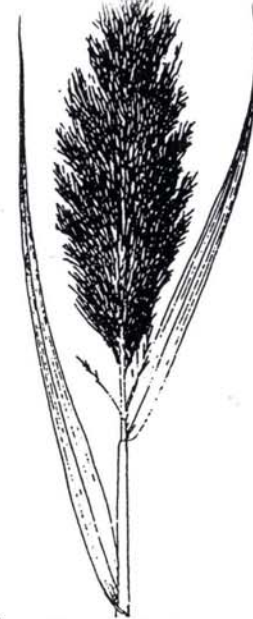
Freshwater Cordgrass
Spartina pectinata

- long leaves tapered to threadlike ends
 - leaves 1/5 " to 2/5 " wide
 - seed heads on short stalks and have bristles
- (p. 112)



Cattail
Typha angustifolia

- leaves grow from the base
 - seed heads cigar like on the stem
- (p. 99)



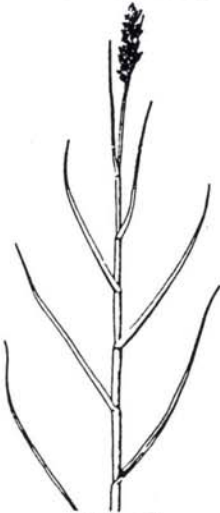
Common Reed
Phragmites australis

- stems round and hollow
 - silky, feathery seed heads at top of stem
- (p. 106)



Saltmeadow Cordgrass
Saltmarsh Hay
Spartina patens

- very narrow leaves
- low spreading grass



Spike Grass
Distichlis spicata

- leaf is narrow, less than 1/8 in.
- many leaves grow in two directions, looks like V's on stem



Creeping Bent Grass
Agrostis stolonifera

- low growing, creeping
- leaves 2 - 4 " long



Switchgrass
Panicum virgatum

- grows in clumps
- seed heads grow on many branches near the top



Black Grass
Juncus gerardii

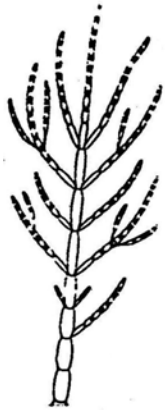
- grasslike, 8 - 24 inches tall
- one to two long leaves
- plant stem is solid and round
- flower/ seed pods are round, similar to peppercorns



Saltmarsh Arrowgrass
Triglochin maritimum

- leaves grow from the base
- leaves up to 20 " long
- seeds grow on a spike

Brackish Marsh Plants (Not grasses)



Glasswort
Salicornia europaea

- fleshy
- stems jointed



Sea Blite
Suaeda linearis

- fleshy
- fleshy leaves, flat on one side, rounded on other



Sea Milkwort
Glaux maritima

- low growing, creeping
- leaves round tipped up to 4/5" long and 1/4" wide



Marsh Orach
Atriplex patula

- arrowhead shaped leaves
- very small flowers in ball shaped clusters

(p. 127)



Wild Morning Glory
Calystegia sepium

- grows like a vine, up to 10 feet long
- triangular shaped leaves

(p. 223)



Umbrella Sedge
Cyperus filicinus

- grass-like and low growing
- stems have three edges
- long thin leaves extend from bottom of flower

(p. 177)



Silverweed
Potentilla egedii

- leaves grow from the base
- leaves silvery hairy beneath
- leaves toothed and increase in size toward the tip

(p. 136)



Smartweed
Polygonum punctatum

- stem jointed
- leaves taper at both ends
- small green or white flowers on spikes



Purple Loosestrife
Lythrum salicaria

- candlestick flowers, purple
- leaves are heart shaped at one end

(Invasive Species)



Water Hemp
Amaranthus cannabinus

- stem smooth
- tiny seeds grow along the stem on spikes



Saltmarsh Aster
Aster subulatus

- daisy-like flowers
- leaves clasp the stem
- leaves grow alternately (not across from each other)



Seaside Goldenrod
Solidago sempervirens

- leaves grow along the stem
- leaves 4 - 16 inches long
- flowers at the top of stem, yellow



Marsh Elder
Iva frutescens

- twig-like brown stem
- is a small shrub
- Leaves are opposite (grow in pairs)