

STREAM ASSESSMENT PROCEDURE

(Modified from Stream Visual Assessment Protocol, December, 1998)

Landowner's Name: _____ Date: _____

County: _____ Prepared by: _____

INSTRUCTIONS: Evaluate a reach of stream equal to about 10 times the average width of the stream. Circle the appropriate score or interpolate between the scores. See the considerations below in completing assessment.

- Ditches may also be assessed if that have perennial or intermittent flow, or if they would qualify for CRP Riparian Forest Buffer.
- Channel widths, depths, and active flood plains are based on bankfull elevations. Bankfull flow corresponds to a 1.5 to 2 years storm event.
- Flood prone areas are based on width at two times the maximum depth of the stream at bankfull flow. If the flow is contained within the channel at two times the maximum depth, then the channel is incised.
- Flooding occurs when the water level reaches the active flood plain. An adequate flood plain is generally 1.5 to 2 times the width of the average stream width at bankfull elevation.

1. Channel Condition (adequate floodplain is generally at least 2 times the channel width)

Natural channel; no structures, dikes. No evidence of down cutting or excessive lateral cutting	Evidence of past channel alteration, but with significant recovery of channel and banks. Any dikes or levees are set back to provide access to an adequate floodplain.	Altered channel; <50% of the reach with riprap and/or channelization. Excess aggradation; braided channel. Dikes or levees restrict floodplain.	Channel is actively down cutting or widening, >50% of the reach with riprap or channelization. Dikes or levees prevent access to the floodplain.
10	7	3	1

SCORE: _____

2. Hydrology Alteration (flooding is out of bank flooding)

Flooding out of bank occurs every 1.5 or 2.0 years. No dams, no water withdrawals, no dikes or other structures limiting the stream's access to the floodplain. Channel is not incised.	Flooding occurs only once every 3-5 years; limited channel incision. Or withdrawals, although present, do not affect available habitat for biota.	Flooding occurs only once every 6-10 years; channel deeply incised. Or withdrawals significantly affect available low flow habitat for biota.	No flooding; channel deeply incised or structures prevent access to floodplain or dam operations prevent flood flows. Or withdrawals have caused severe loss of low flow habitat. Or flooding occurs on a 1 year rain event or less.
10	7	3	1

SCORE: _____

3. Riparian Zone (evaluate general conditions along entire reach, natural vegetation includes hardwood trees, mixed shrubs, and native herbaceous species)

Natural vegetation extends more than 50 feet on each side.	Natural vegetation extends at least 35 feet on each side.	Natural vegetation extends at least 15 feet on each side.	Natural vegetation extends < 15 feet on each side.
10	8	5	1

SCORE: _____

4. Bank Stability

Banks are stable; banks are low and at elevation of active floodplain; 33% or more of eroding banks are on outside bends and are protected by roots extending into the base flow elevation.	Moderately stable; banks are low; <33% of eroding banks are on outside bends and are protected by roots extending into the base flow.	Moderately unstable; banks are high and flooding occurs 1 year out of 5 or less frequently. Outside banks are actively eroding with some slope failures.	Unstable; banks are high and eroding in some straight reaches and inside banks; numerous slope failures.
10	7	3	1

SCORE: _____

5. Water Appearance

Very clear; or clear but tea colored; objects visible at depths of 3-6 feet. No noticeable film on surface or submerged objects.	Occasionally cloudy, especially after storm event; but clears rapidly; objects visible at depth of 1.5-3 feet; may have slight green color.	Considerable cloudiness most of the time; objects visible to depth of .5-1.5 feet; submerged objects with heavy green film, or moderate odor of ammonia.	Very turbid or muddy appearance most of the time; objects visible to depth <.5 feet; heavy coat of film on surface or submerged objects; strong odor of ammonia.
10	7	3	1

SCORE: _____

6. Nutrient Enrichment

Clear water along entire reach; little or no algal growth present.	Fairly clear or slightly greenish water along entire reach; moderate algal growth on submerged objects.	Greenish water along entire reach; abundance of green macrophytes, especially during warm months.	Pea green, gray, or brown water along entire reach; thick algal mats in stream.
10	7	3	1

SCORE: _____

7. Barriers to Fish Movement

No barriers; natural drops <1 foot.	Seasonal water withdrawals inhibit movement of fish.	Drop structures, culverts (<1 foot drop) present within reach.	Drop structures, culverts, or dams present within 3 miles of reach.	Drop structures, culverts, or dams (>1 foot drop) present within reach.
10	8	5	3	1

SCORE: _____

8. In-stream Fish Cover (cover types: large woody debris, deep pools, overhanging vegetation, boulders/cobble, riffles, undercut banks, thick root mats)

>7 cover types	6-7 cover types	4-5 cover types	2-3 cover types	1 or less cover types present.
10	8	5	3	1

SCORE: _____

9. Pools

Deep and shallow pools abundant (>3); pools at least 5 ft. deep.	Pools present, but not abundant (<3); pools at least 3 ft. deep.	Pools present, but shallow, <3 ft. deep.	Pools absent; entire bottom visible.
10	7	3	1

SCORE: _____

**10. Canopy Cover (Use coldwater or warm water below, not both)
Coldwater Fishery (Pickens, Oconee, Greenville Counties above US Hwy 11)**

>75% of water surface shaded and upstream 2-3 miles generally shaded.	>50% shaded in reach; or >75% shaded in reach and 2-3 miles upstream poorly shaded.	20-50% shaded.	<20% shaded in reach.
10	7	3	1

Warm water fishery (all area of S.C. except as noted above)

25-90% of reach shaded.	>90% shaded; full canopy.	<25% of surface shaded in reach.
10	7	1

SCORE: _____

11. Manure Presence

No livestock accessible to stream, riparian area, or floodplain.	Evidence of livestock access to riparian area.	Occasional manure in stream; waste storage structure located in floodplain.	Extensive amount of manure on banks or in stream.
10	5	3	1

SCORE: _____

AVERAGE SCORE (TOTAL SCORE / 11): _____

Enter score on SC-CPA-52, Water Quality.

If more detailed analysis is needed use:

12. Beck's Index (Stream macro-invertebrates observed; attach data sheet).

Habitat Quality Rating

< 6.0 Poor
6.1 – 7.4 Fair
7.5 – 8.9 Good
> 9.0 Excellent

**Beck's Index
For
Stream Macro-invertebrates**

(Tally number of individuals in each Taxa)

Group 1 Taxa

Stonefly _____
Caddis fly _____
Water penny _____
Riffle beetle _____
Gilled snail _____
Mayfly _____
Dobsonfly (hellgrammite) _____

Group 2 Taxa

Crayfish _____
Sowbug _____
Scud _____
Alderfly larvae _____
Fish fly larvae _____
Damselfly _____
Watersnipe fly larvae _____
Crane fly _____
Beetle larvae _____
Dragonfly _____
Clam _____

Group 3 Taxa

Aquatic worm _____
Midge fly larvae _____
Black fly larvae _____
Leech _____
Pouch snail _____
Other snails _____

Beck's Index:

(Use total number of different Taxa in each Group)

$$BI = 2 \times (\text{Group 1}) + (\text{Group 2})$$

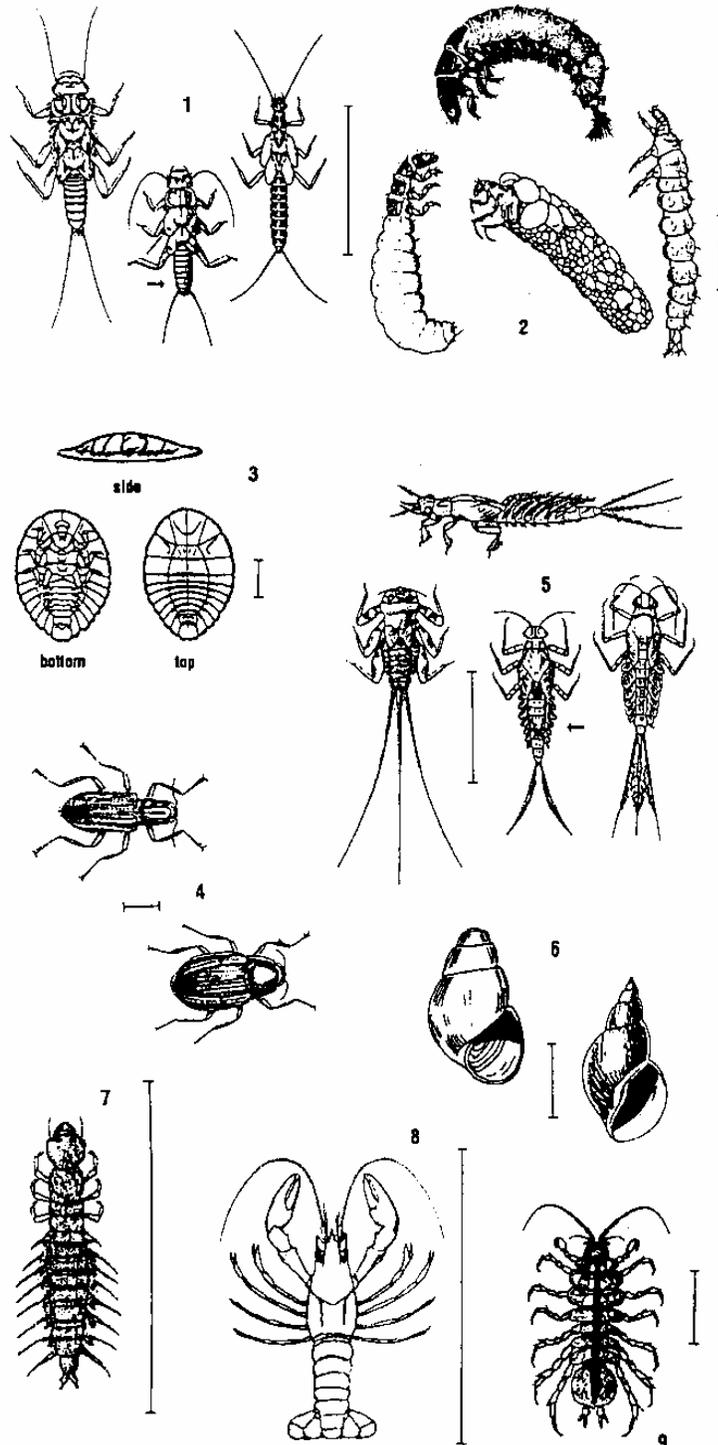
Beck's Index Values

0 Stream grossly polluted
1-5 Stream moderately polluted
6-9 Stream clean, but monotypic habitat
10+ Stream clean

Stream Invertebrates

Group One Taxa

Pollution sensitive organisms found in good quality water.



- 1 **Stonefly Order Plecoptera.** 1/2" to 1 1/2". 6 legs with hooked antenna, 2 hair-line tails. Smooth (no gills) on lower half of body (see arrow).
- 2 **Caddisfly: Order Trichoptera.** Up to 1", 6 hooked legs on upper third of body, 2 hooks at back end. May be in a stick, rock, or leaf case with its head sticking out. May have fluffy gill tufts on underside.
- 3 **Water Penny: Order Coleoptera.** 1/4", flat saucer-shaped body with a raised bump on one side and 6 tiny legs and fluffy gills on the other side. Immature beetle.
- 4 **Riffle Beetle: Order Coleoptera.** 1/4", oval body covered with tiny hairs, 6 legs, antennae. Walks slowly underwater. Does not swim on surface.
- 5 **Grilled Snail: Class Gastropoda.** Shell opening covered by thin plate called operculum. When opening is facing you, shell usually opens on right.
- 6 **Mayfly: Order Ephemeroptera.** 1/4" to 1", brown, moving, plate-like or feathery gills on the sides of lower body (see below), 6 large hooked legs, antennae, 2 or 3 long hair-like tails. Tails may be webbed together.
- 7 **Dobsonfly (hellgrammite): Family Corydalidae.** 3/4" to 4", dark-colored, 6 legs, large pinching jaws, eight pairs feelers on lower half of body with paired cotton-like gill tufts along underside, short antennae, 2 tails, and 2 pairs of hooks at back end.

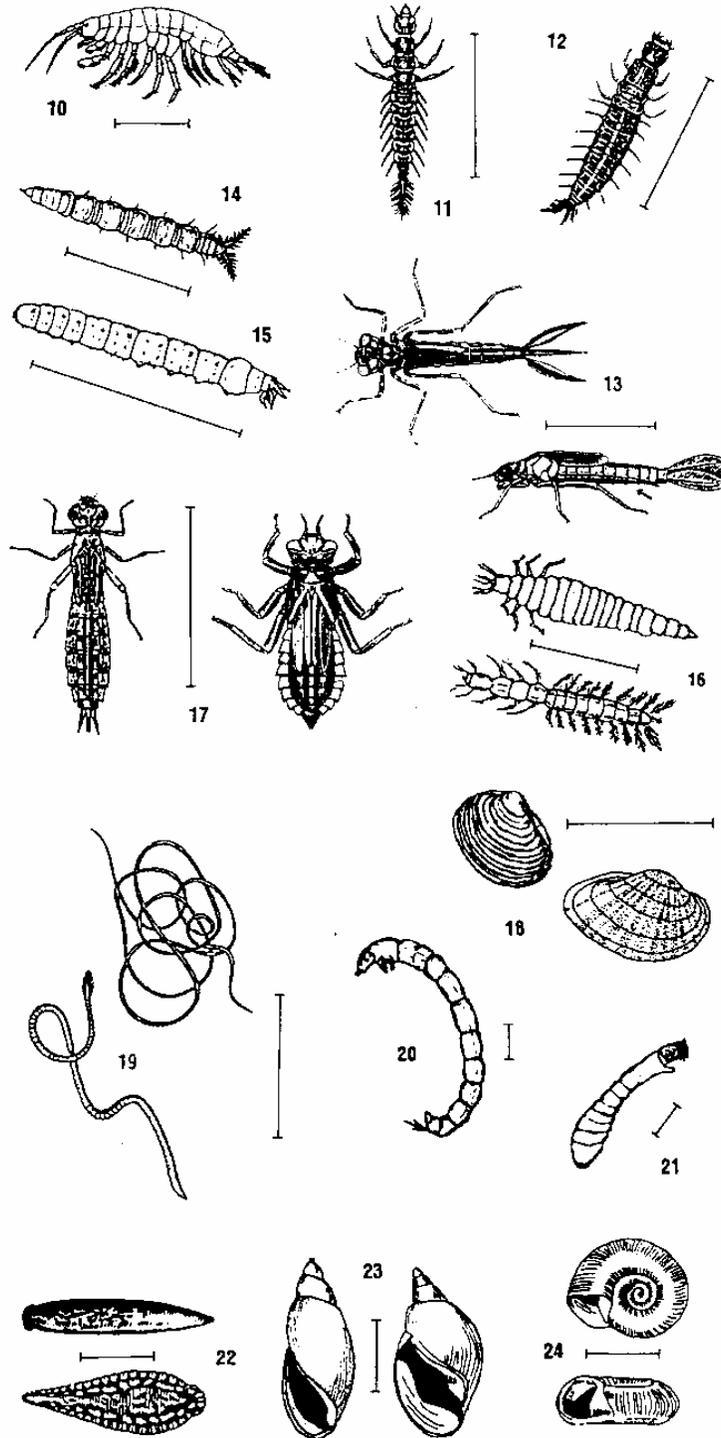
Group Two Taxa

Somewhat pollution tolerant organisms can be in good or fair quality water.

- 8 **Crayfish: Order Decapoda.** Up to 6", 1 large claws, 8 legs, resembles small lobster.
- 9 **Sowbug: Order Isopoda.** 1/4" to 3/4", gray oblong body wider than it is high, more than 6 legs, long antennae.

Bar line indicate relative size

Source: Izaak Walton League of America, 707 Conservation Lane, Gaithersburg, MD 20878-2983 (800) BUG-IWLA



Bar line indicate relative size

Group Two Taxa

Somewhat pollution tolerant organisms can be in good or fair quality water.

- 10 **Scud: Order Amphipoda.** 1/4", white to gray, body higher than it is wide, swims sideways, more than 6 legs, resembles small shrimp.
- 11 **Alderfly Larva: Family Sialidae.** 1" long. Looks like small Hellgramite but has long, thin, branched tail at back end (no hooks). No gill tufts underneath.
- 12 **Fishfly Larva: Family Cordalidae.** Up to 1/2" long. Looks like small hellgramite but often a lighter reedish-tan color, or with yellowish streaks. No gill tufts underneath.
- 13 **Damselfly: Suborder Zugoptera.** 1/2" to 1" large eyes, 6 thin hooked legs, 3 broad oar-shaped tails, positioned like a tripod. Smooth (no gills) on sides of lower half of body. (See arrow.)
- 14 **Watersnipe Fly Larva: Family Athericidae (Atherix).** 1/4" to 1", pale to green, tapered body, many caterpillar-like legs, conical head, feathery "horns" at back end.
- 15 **Crane Fly: Suborder Nematocera.** 1/3" to 2", milky, green, or light brown, plump caterpillar-like segmented body, 4 finger-like lobes at back end.
- 16 **Beetle Larva: Order Coleoptera.** 1/4" to 1", light-colored, 6 legs on upper half of body, feelers, antennae.
- 17 **Dragon fly: Suborder Anisoptera.** 1/2" to 2", large eyes, 6 hooked legs. Wide oval to round abdomen.
- 18 **Clam: Class Bivalvia.**

Group Three Taxa

Pollution tolerant organisms can be in any quality of water.

- 19 **Aquatic Worm: Class Oligochaeta.** 1/4" to 2", can be very tiny, thin worm-like body.
- 20 **Midge Fly Larva: Suborder Nematocera.** Up to 1/4", dark head, worm-like segmented body, 2 tiny legs on each side.
- 21 **Blackfly Larva: Family Simuliidae.** Up to 1/4", one end of body wider. Black head, suction pad on other end.
- 22 **Leech: Order Hirudinea.** 1/4" to 2", brown, slimy body, ends with suction pads.
- 23 **Pouch Snail and Pond Snails: Class Gastropoda.** No operculum. Breath air. When opening is facing you, shell usually open to left.
- 24 **Other Snails: Class Gastropoda.** No operculum. Breath air. Snail shell coils in one plane.