

HANOVER MASTER GARDENER CLASS 2019

Jane M. White, Trainee

- Moved from East Tennessee to Ashland, Virginia in 2016
- Retired – Starr Imprints (Entrepreneur)
- Previous Employments: Clerk Typist, Payroll Clerk, Bookkeeper, Substitute Rural Mail Carrier, Office Manager, Corporate President
- Hobbies: Genealogy, Reading, Sewing, Traveling, Fishing

Jane M White, Trainee - Hanover Master Gardeners Class 2019

Willie Wiggler, Undercover Agent



Virginia Cooperative Extension
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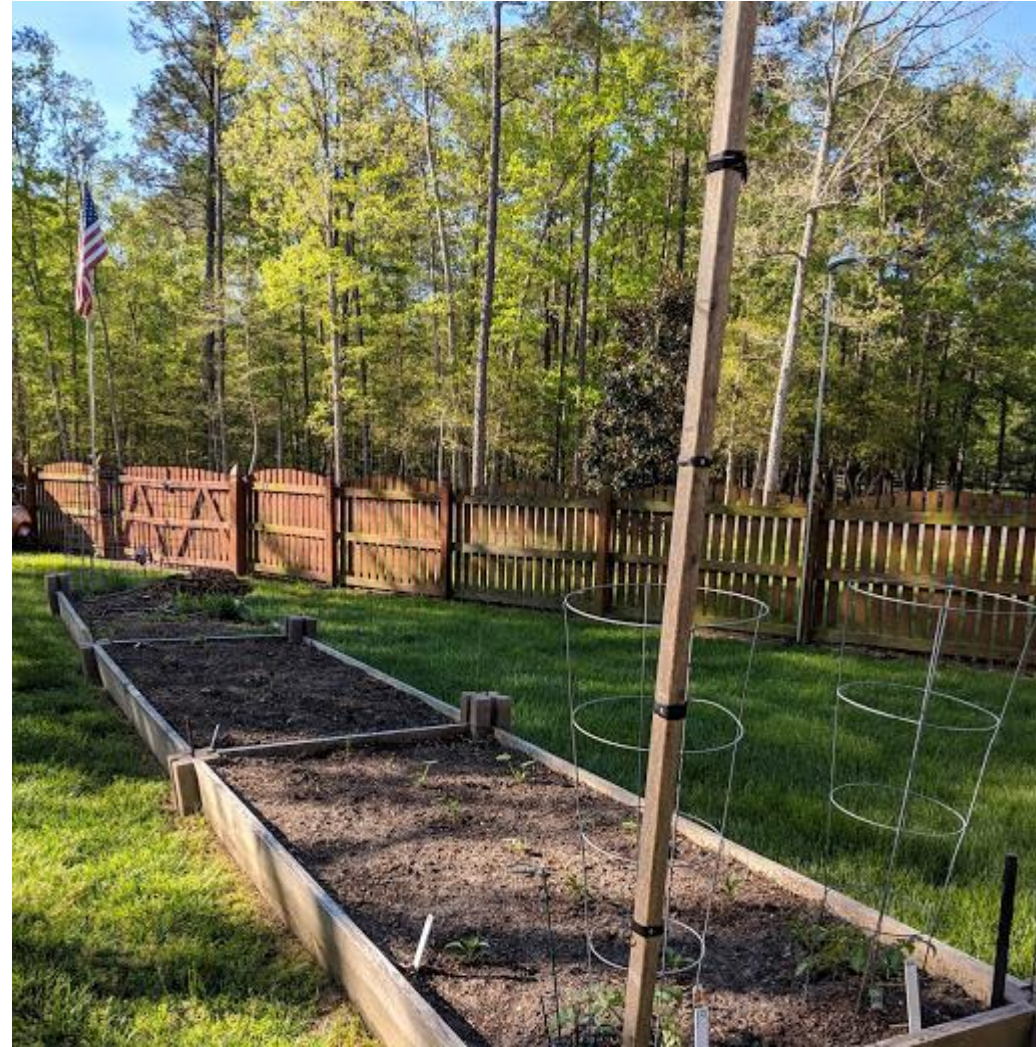
Presentation Goals:

- To explore the biology of the earthworm
- To emphasize the major benefits the earthworm provides in its quiet, unassuming life-style and life cycle
- **To encourage everyone to study, learn and practice better stewardship of our environment and ecosystems, including very small members of our world, on a daily basis.**



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Photos by: Jane M White

Older residents needing assistance with landscaping and gardening tasks...

JOB VACANCY ANNOUNCEMENT – UNDERCOVER AGENT

- ★ Full-time position
- ★ Long-term work guaranteed
- ★ Unlimited opportunities to improve the environment
 - Work schedule, 24 hours per day, 365 days per year
 - No advancements, no fringe benefits, no uniform required
 - No holidays, no retirement program, no overtime or monetary compensation
 - No parental/family leave, no extensive travel opportunities



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WILLIE WIGGLER, UNDERCOVER AGENT

JOB APPLICANT PERSONAL DATA



Name: Willie Wiggler

Current Address: Local Raised-Bed Garden, Any Town, USA

Phone/Email: No service available

Previous Addresses: Front Lawns, Backyards, Barn Lots, Pasture Fields, Everywhere, etc.

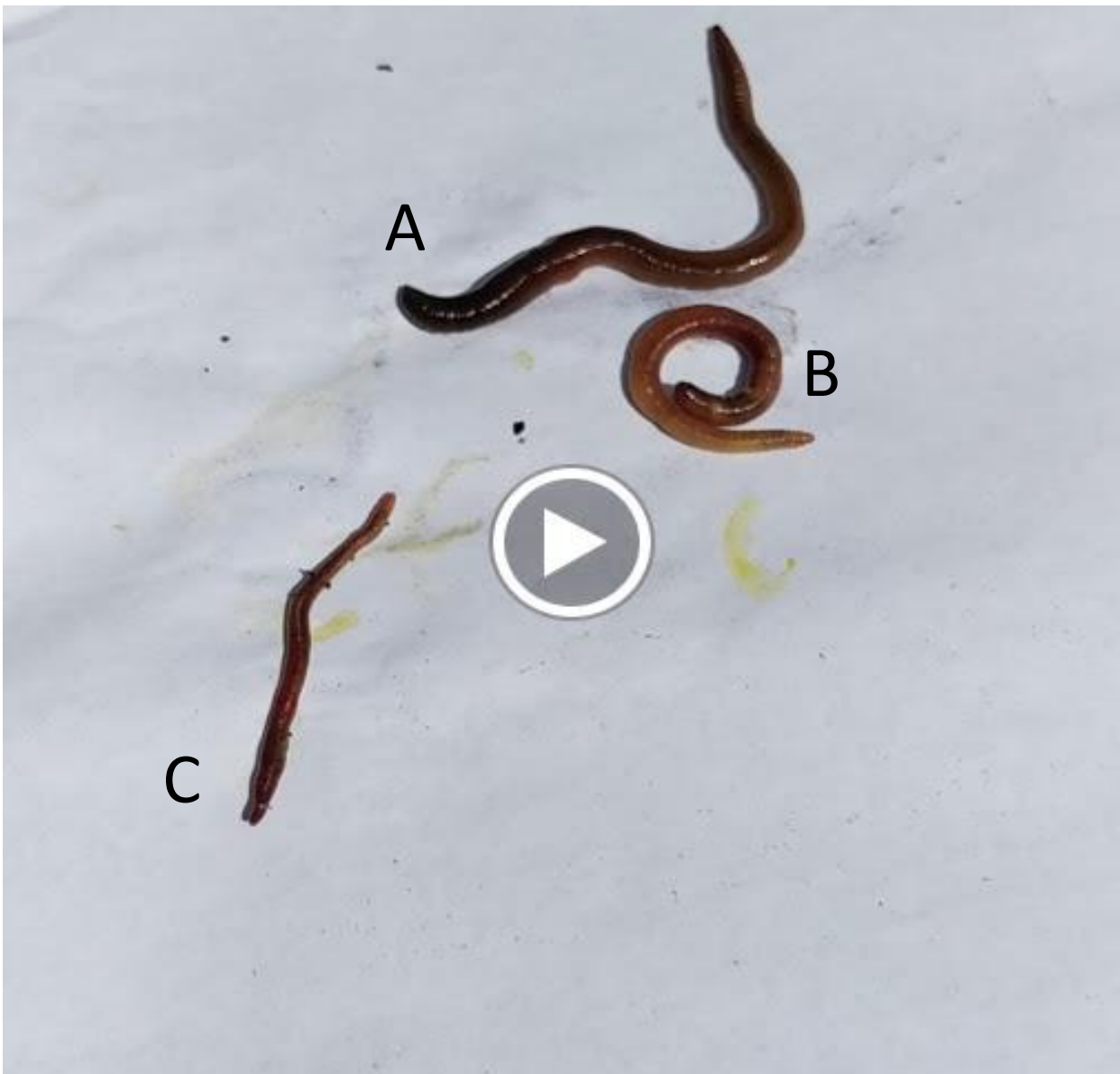
Other names used: *Lumbricus terrestris* – Night crawler (Top soil dweller, 0-12 inch depth)

Lumbricus rubellus – Red worm (Sub soil dweller, 0-6 inch depth)

Eisenia fetida – Red Wiggler (Compost dweller, high organic environment)

Body Build: Cold-blooded, five hearts, no lungs, no hands, no feet, no legs, no teeth, mostly muscles & nerves

Total Life Span: Estimated 4-8 years



A: Big Red Worm B: Nightcrawler
C: Red Wiggler

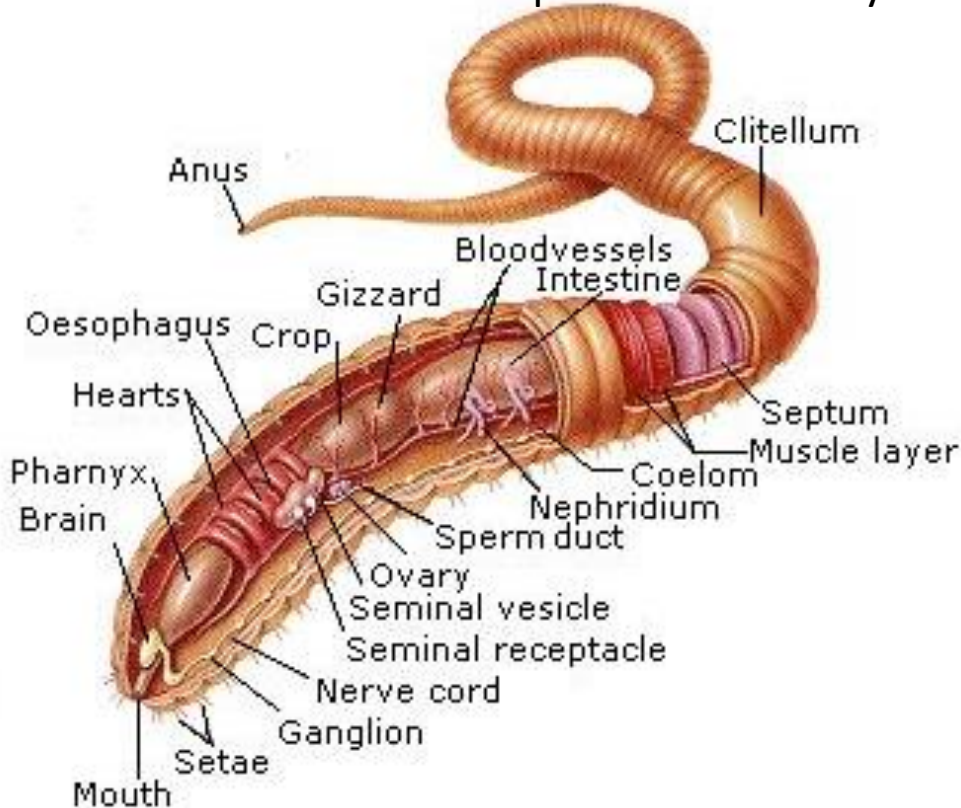


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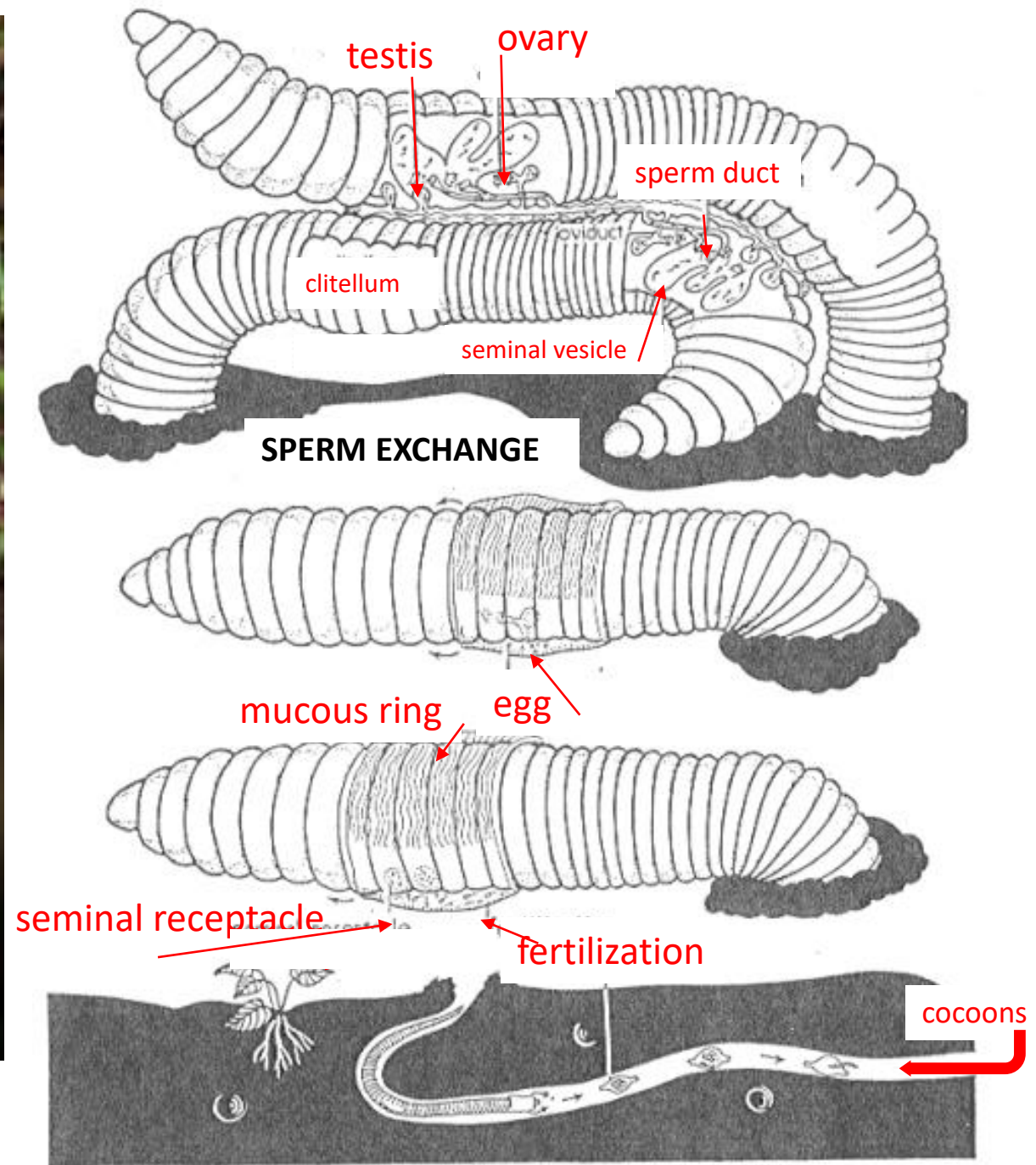
Big Red Worm

- **Anus** – posterior opening of alimentary canal
- **Blood vessels** – vessels through which blood circulates in the body
- **Brain** – a knot of nerves
- **Clitellum** – thickened glandular section that secretes a sac in which eggs are deposited
- **Coelom** – epithelium-lined space between the body wall and a digestive tract cavity lined with specialized cells
- **Crop** – pouched enlargement of gullet serving as receptacle for food and maceration thereof
- **Ganglion** – Mass of nerve tissue containing nerve tissue external to the brain
- **Gizzard** – thickened part of alimentary canal for grinding food
- **Intestines** – tubular part of alimentary canal extending from stomach to the anus

Graphic Source:
 “Backyard Worms”, Texas A&M AgriLife Extension



- **Nerve cord** – Pair of closely united ventral longitudinal nerves with their segmental ganglia characteristic of elongate invertebrates
- **Nephridium** – tubular glandular excretory organ
- **Oesophagus** – tube from mouth to stomach
- **Ovary** – female reproductive organ that produces eggs
- **Pharynx** – canal between cavity of mouth and oesophagus
- **Seminal vesicle** – membranous, fluid-filled pouch containing semen
- **Seminal receptacle** – cavity to receive and hold seminal fluid
- **Septum** – dividing wall or membrane between bodily spaces or masses of soft tissue
- **Setae** – Bristly and springy hairs
- **Sperm duct** – bodily tube carrying sperm



Graphics Source:
"Backyard Worms", Texas A&M AgriLife Extension

BENEFITS OF EARTHWORMS

- Reduce and recycle ground surface litter, such as plant and animal residue
- Enable better root penetration as they borrow through the soil
- Improve water infiltration and reduce water run off
- Provide better water drainage and aeration
- Are hermaphroditic so ALL lay eggs as each one is both male and female
- Consumes its body weight in soil and organic matter daily
- Improves soil fertility with nutrients provided in castings and promotes microbe growth

CASTINGS

Nutrient Values

- Nitrogen 1.80 – 2.05 %
- Potassium 1.28 – 1.50 %
- Magnesium 0.4 – 0.7 %
- Manganese Traces to 0.40 %
- Organic Carbon 20-30%
- Phosphorus 1.32 – 1.93 %
- Calcium 3.0 – 4.5 %
- Iron 0.3 – 0.7 %
- Zinc 0.028 – 0.036 %
- pH 6.0 – 7.0



Source:

“Backyard Worms”, Texas A&M AgriLife Extension

Willie Wiggler and I would like to thank **YOU**, each of you, for attending and sharing your time with us this evening. We trust that you have enjoyed the presentation and have been motivated to learn more about our environmental surroundings.

Please share your enthusiasm for better environmental stewardship with friends and family members. For more information, check the Hanover Master Gardener website <http://hanovermastergardeners.org/>. For further assistance, call the Hanover Extension Office 804-752-4310.

QUESTIONS?



REFERENCES:

Books:

The Complete Guide to Working with Worms, Wendy Vincent, Atlantic Publishing Group, Inc., Ocala, Florida, 2012

Worms Eat My Garbage, Mary Appelhof, Flowerfield Enterprises, LLC, Kalamazoo, Michigan, Second Edition, 1982

Websites:

<https://extension.illinois.edu/soil/SoilBiology/earthworms.htm>

<https://extension.illinois.edu/worms/live/>

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<https://lancaster.unl.edu/hort/articles/2004/nightcrawlers.shtml>

<https://content.ces.ncsu.edu/raising-earthworms-successfully>

<https://www.extension.purdue.edu/extmedia/ay/ay-279.html>

<https://psu.edu/earthworms>

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