

ORCHIDS STUDENT OUTLINE
(HEJ; pg 132-134)
(American Orchid Society- www.aos.org)
Any bolded words should be learned for exam!

- I. Introduction –
- II. Terminology -
 - A. **Bilateral Symmetry** – symmetry that results in two identical halves but only through one plane dividing an organism into roughly mirror image halves. This is a distinguishing characteristic of orchid blooms.
 - B. **Epiphytes** - Orchids are epiphytes growing in the air rather than in the soil. Their roots attach to trees or rocks they capture nutrients and moisture that wash over them from the rain.
 - C. **Inflorescence** – multiple flowers on a common stem with each flower having its own pedicel.
 - D. **Pedicel** – supporting stalk that attaches an individual floret to the flower stem.
 - E. **Radial Symmetry** – when the plant/flower can be dissected in numerous ways through a central point, resulting in identical sections (think a cut pie of equal sizes). This almost never happens with orchids since the lip is usually unique from the rest of the bloom, prohibiting radial symmetry.
 - F. **Tepals** – the sepals and petals of monocot flowers that are nearly identical in form and color.
 - G. **Terrestrials** – those plants that grow in and on the soil/ground.
- III. Care –
 - A. Water - overwatering leads to killing more orchids than underwatering. The constant wetness rots roots. Shriveled leaves indicate a lack of water to plant tissue. If epiphytes, look at roots – they should be green or whitish and plump. If roots are thin, shriveled or scarce, water uptake will be very limited. If there are enough roots and color is good, then the culprit is likely the medium or simply underwatering. If watering terrestrial orchids, never use chemically treated water – sit water out for a few days to allow the chemicals to dissipate.
 - B. Feeding – orchids need regular feeding with a balanced (20-20-20 works well). There should be little or no urea in the mix. Good rule of thumb is that orchids do better with less than more feed – the “weakly weekly” approach works well. Never apply fertilizer to a completely dry root system, fertilizer can burn dry roots
 - C. Potting Medium/Repotting – NEVER repot an orchid when it is blooming. Sympodials should be repotted when the rhizome protrudes over the edge of the pot or when potting medium decomposes too much and drains slowly. Rule of thumb: repot Sympodials every 2 years after flowering and when new growth appears. Orchids prefer a ‘tight’ pot, allowing for only a couple of year growth. Monopodials have no pseudobulbs to hold moisture so watering and keeping roots moist is more important – however, these orchids should never sit in water either. NEVER TAKE THESE PLANTS FROM THE WILD – get your transplants from a reputable dealer.
 - D. Light – south and east-facing windows work best. Most terrestrials grow beautifully in a shady woodland garden with dappled sunlight.
 - E. Temperature – Generally the tropical orchids are grouped into 3 groups: Cool – Cymbidium; Warm – Vanda & Phalaenopsis; Intermediate – others. If raising orchids, the American Orchid Society has excellent care requirements for individual genus and often even species of orchids.
- IV. Disease/Insect Issues – There is a particularly comprehensive list of care in the American Orchid Society web site.
- V. Conformation of Orchids – All orchids are perennials that lack any permanent woody structures. They have 2 growth patterns: 1. **Monopodial** – stem grows from a single bud, leaves are added from the apex each year; and 2. **Sympodial** – these orchids have a front (newest growth) and back (oldest growth) – they grow in a “marching along the pot” system, meaning they grow horizontally in only one direction. Pseudobulbs (shoots) grow upward from the rhizome and roots develop on the underside.

The structure of orchid flowers is unique among flowers. **Flowers** - ALL orchid blooms have an outer whorl of 3 sepals and an inner whorl of 3 petals which together are called tepals. The central petal becomes modified and is called the

lip (labellum). On many of the flowers, this lip, as the bud develops, begins at the very top of the bloom but by the time it opens into a fully formed flower, the stem has twisted so that the lip is pointing downward. The lip can form a pouch in some types of orchids. Often the lip is colored differently from the other petals and they may be ruffled, pouch-shaped and/or decorated with crests, tails, horns, fans, warts, teeth, freckles or other decorations. The sepals are the protective cover of the bud. Once open, they enlarge and take on color. Most of the time the sepals look like two of the petals. However, sometimes the top sepal becomes very large and showy. In other species all 3 sepals fuse, forming a bell-shaped structure around the flower. **Column** - Another part of the orchid is the central column of male stamens attached to the female pistils. This column is quite unique. Male and female organs fused into a tubular, waxy structure is called the column. It both releases pollen AND receives it from another orchid. The pollen is not free and powdery but held in waxy masses of pellets. Usually dependent on availability of the specific insect that transfers the pollen. **Leaves** –Almost as varied as the flowers, leaves can be thin, broad, succulent, cylindrical, tiny or as long as 3’ in length. They appear in shades of gray, green or blue. Jewel orchids have leaves that include those 3 colors as well as red, brown, silver, bronze and copper. The leaves grow in a fan shape. **Roots** – Orchid roots of the plants usually serve 2 basic purposes: anchoring and absorption of nutrients & moisture. The roots are thick with a fragile inner core protected by a thick spongy layer which is essentially air-pockets of dead cells that allows for a high absorbency of moisture and nutrients. When showing orchids, roots should be plump and not broken; not shriveled and it is ok for them to grow over the edge of the containers. **Pseudobulbs** - A thickened part of the stem resembling a bulb. Should be solid and covered with their papery coatings when exhibiting.

VI. Types of Orchids:

- A. **Monopodial**: Single main stem which produces a series of leaves at apical bud (growth tip). Roots and flowers then emerge at the nodes above each leaf. Occasionally the stem may branch but infrequent.
- A. **Sympodial**: Rhizome at base with a series of growths developing upward from the rhizome. As the rhizome grows horizontally it bends upward and develops into a small plant with leaves, sometimes a pseudobulb and flower stems. After blooming when the plant resumes growth an axillary bud at the base of the previous growth will begin growing another rhizome segment. Thus, the process is repeated. The old growth will not rebloom. Each new growth is known as a lead. Some plants have 1 lead and others produce a series of growth arranged along a line. In other plants the rhizome branches into multiple leads and eventually form a large clump.

C. **Terrestrials**

- VII. Awards: Orchids are generally shown as container plants. This might mean a single plant in a conventional container or it could be single plant hanging in a Kokedama or other hanging vessel – these would be eligible for Grower’s Choice Award. It could be that there is a class of Hanging Gardens and that means 3 or more differing orchids would be in the same hanging container – again Grower’s Choice. Perhaps a Section of Collections or a Section of Displays – these would be eligible for Collector’s Showcase Award. There is the opportunity to show miniature orchids in a section and the award then would be the Elfin Award. Rarely they are shown as cut flowering – if they are, then this would fall under Award of Merit. In other words, except for Arboreal, orchids COULD be eligible for any of the other horticulture section awards.

- VIII. Schedule Ideas: This show is entitled ‘Madame Butterfly’ and is a salute to all things Asian.

Division I: Horticulture is entitled: Asian Goddesses.

Section A – Kishiijo-Ten, Japanese Goddess of Beauty: ‘Tropical Exotics’ Container-Grown Flowering Specimens – Staged on stair-step stands with each step being 15” deep. Container not to exceed 12” in diameter; specimen must be in bloom.

- 3a – *Aeschynanthus* (lipstick plant)
- 3b – *Saintpaulia* (African violet)
- 3c – *Streptocarpus* (cape primrose)
- 3d – Other Worthy Specimen

- 4c. *Oncidium*
- 4d. *Paphiopedilum*
- 4e. *Phalaenopsis*
- 4f. *Vanda*
- 4g. Other Worthy Specimens

Section B - Benzai-Ten, Japanese Goddess of Dancers: Hanging Container-Grown Orchids – in-bloom specimens – Staged as Kokedamas, not to exceed 12” in diameter. Hung from horizontal wire across room with specimens hanging at 5 ½’ from floor.

- Class 1 – *Cattleya*
- Class 2 – *Cymbidium*
- Class 3 – *Oncidium*
- Class 4 – *Phalaenopsis*
- Class 5 – Other Worthy Specimen

- IX. Judging Conditions: **Orchids require study prior to judging** – just know that.
- A. Conformance (5 pts) – *adherence to the class’ requirements*. This is an all or nothing quality – either the specimen conforms, or it doesn’t. The best thing to do is read the class requirements and then ask yourself if the specimen meets those requirements or not. If it does, award it 5 pts., if it doesn’t, deduct 5 pts. Because you have a full 5 points for plant identification don’t use plant ID as part of the Conformance – use those 5 pts for plant ID, not conformance. **Favorable Comments:** meets class requirements; fulfills all schedule requirements; meets section award requirements. **Unfavorable Comments:** fails to meet class requirements **and why;** doesn’t meet schedule requirements **and why;** award requirements not met **in what way.**
 - B. Plant Identification (5 pts) – *identified by the binomial name or currently accepted scientific designation*. Genus and specific epithet are required, and hybrids require cultivar names or parentage (this means both the pollen and seed parent. The names are separated by an x). **Favorable Comments:** genus and specific epithet; full binomial and cultivar; completely and correctly named; legible. **Unfavorable Comments:** no full binomial; just genus; can’t read.
 - C. Peak of Perfection: (75 pts) – *show worthiness of the specimen*. For orchids, because they are grown for those beautiful flowers, the highest percentage of the points within this quality should be directed at the blooms. **The only place leaves & roots are taken into consideration under Peak of Perfection is under Condition/Blemishes – NOT under Form, Color or Maturity/Size. In this family of plants, flowers rule!!!**
 - 1. FORM (20 pts): *overall 3-D shape of the specimen as well as individual parts*. For orchids, the flower is all important, especially for Peak of Perfection qualities. All *Orchid* bloom/s should be bilaterally symmetrical, they should have 6 tepals (often a lip or pouch has been developed from one of the petals and/or sometimes the sepals fuse to form more of a bell around the 3 petals). Whichever form it takes, the flower should be bilaterally symmetrical. It is good to mention the tepal/petal/sepals shape – i.e. rounded, long and pointed, etc. Generally, the flower head may be described as two triangles, one upside down over the other. If you draw a line around the flower, it should look like a circle or oval. Petals usually reflex back just a bit rather than cupping forward. Petal margins may be wavy or undulating or frilled or straight. *On multiflowered specimens, the stem tends to be arching. It is critical that you look at the spacing, how the individual flowers face, symmetry both of the individual flowers as well as the entire flower stem. The flowers should not appear crowded and should generally face forward or upwards. They should also be centered on the stem. To the extent that a tepal is aligned with the stem, that is referred to as axis balance. Then, uniformity is important for those plants having multiple flowers – they should be approximately the same size and certainly the same shape. Let’s discuss briefly the most common types of flower and form:
 - a. *Cattleya* – Flower sepals and petals should be free from one another and full and round with tepals and lip all touching the edge of an imaginary circle. Sepals should form one triangle and petals & labellum another that is inverted. When viewed from the side, the flowers should be nearly flat. The lip should be prominent and looking a bit downward (not droopy). Expect to see roots extending over the sides of containers – this is permitted. *Cymbidium* – up to 15 flowers/stem these have a clustered but not crowded effect. Waxy texture on the petals/sepals and the ends of the petal/sepals are rounded. The flowers may be a bit star-like and cupped but not excessively so. Petals and sepals are broad. Sepals

- should form an equilateral triangle while petals & labellum are formed like an isosceles triangle (base much longer than sides). *Dendrobium* – Form depends on the type – some have a *Cattelya* form while others the *Phalaenopsis* forms. If the petals and tepals are equal, the form should be symmetrical.
- b. *Oncidium* – flowers march up the stem of the plant and the lip has a callus with column wings present. Should appear round, full and flat. Draw your imaginary circle for this one and hopefully the flowers fill it.
 - c. *Paphiopedilum* – This species usually has only one flower on an upright stem. Petals are long and pendulous and flowers are a broad oval in shape. Petals should be broad. The pouch should be full and not protrude excessively forward. *Phalaenopsis* – Inflorescence should have numerous blooms up and down the bloom stem. Some cultivars have flowers that look very similar to a starfish while in others, the petals/sepals are much wider. All flowers should be facing the same way. Sepals are in an equilateral triangle while petals are broad and flat and fill in space between sepals. On most of these, the flat blooms all face the same direction. The lip is usually more vivid than the other petals/sepals.
 - d. *Vanda* – Flower should appear round, full and flat. Inflorescence presents in a graceful arch. Sepals should fit into an equilateral triangle and be round and broad. For the others, refer to VI, Types of Orchids above for some individual characteristics. Favorable Comments: Upright growth, 6 individual tepals on single bloom/s with no fusing; bloom/s bilaterally symmetrical; tepals reflex backwards; overall flower form fits inside a circle; noodle-like roots; graceful arching flower stem. Unfavorable Comments: sepals overlap creating an unsymmetrical bloom; broken roots, blooms facing many directions, no consistent triangular form on blooms; on this specimen the pouch protrudes excessively forward.
2. COLOR (20 pts): *visual perception of the hues, shades, tints, and tones of all parts of the specimen.* Color is very important for the flowers in this family of plants. They may be rich jewel colors, pale, soft shades, almost black and white or even green in color but be detailed in the description of the plant – never just say yellow. Is it a rich, saturated banana yellow? Or perhaps a soft, creamy yellow. Stripes are important - as is mottling. If the lip is a different color from the rest of the bloom describe it (frequently the lip is brighter and stands out from the other tepals). Be descriptive. Favorable Comments: purple background with light purple speckling; white tepals with soft pink lip; center of tepals yellow with brownish border; lip bright fuchsia while other tepals a soft fuchsia; heavy green vertical streaking throughout cream tepals. Unfavorable Comments: pigment washout on 1 petal; uneven stripes on 2 tepals; colors not crisp and clear as should be for cultivar; age spots creating washed-out color; color of lip is muddy;
 3. MATURITY/SIZE (20 pts): *the ideal stage of development for the specific plant exhibited.* The smallest orchid is the size of a nickel while a tiger orchid *Grammatophyllum* located in the Brooklyn Botanic Garden is 12' wide, weighs 3000 lbs and has hundreds of flowers blooming on 17 spikes. Its flowers are 6" in diameter. What size is a normal orchid? The answer is to look up the specific types of orchids you will be judging. As example, the *Phalaenopsis* is generally about a foot tall, flowers are 3-5" across and leaves are 8-12" long. Of course, differing species/cultivars might be larger or smaller but at least these figures serve as a general size for this particular genus. Orchids are shown as flowering exhibits so a mature plant for flower show must, of course, be in bloom. If bud count is more than open buds, the plant is not fully mature but if there are NO buds on multi-flowered specimens and all blooms are fully opened and starting to look just a bit faded or crepey then likely the plant is a bit past prime. If there is evidence of new growth in the container, that means the plant is happy where it has been planted and mature enough to produce new growth. Petite orchids are judged the same as standard sized orchids but of course they NEVER compete with standards. Orchids are a good choice for a Petite Section with the Elfin Award but if the show isn't large enough, a class of miniature orchids can often easily be filled. Last comment – consider flowers only for size comments. Favorable Comments: Maturity - 20 blooms, 5 buds on stem; no green tips on tepal; Size - blooms all approximately 3" in diameter; entire plant 1 ½' tall and 1' wide. *These comments assume that these are appropriate measurements for the specific type of orchid being judged.* Unfavorable Comments: Maturity - more

buds than blooms on flower stem; crepiness on several flower petals indicate plant is past prime; only 2 flowers fully opened on a stem of 6 blooms/buds; Size - flowers only average 2" in diameter; entire plant is only 6" in height.

4. **CONDITION/BLEMISHES (15 pts):** *the physical appearance of the specimen at time of judging.* In this judging quality the leaf can & should be considered for hydration, reps/tears/insect/disease marks, etc. Flowers should look fresh and lush and well-hydrated. The flower can be waxy or it can have a matte finish, either will help determine the condition of the flower – as opposed to crepiness and a wilting look. Some types of orchids will have aerial roots that are visible – these should be plump and unbroken – if broken, they should have been removed. There may also be old bloom stems on *Phalaenopsis* which should be left on the plant if they are still green, as they will likely rebloom at a later date. Brown stems are a past prime indicator. If pseudobulbs are present they should be solid, look well-hydrated and will probably have a light, papery covering. Leaves may have fungal, virus or bacterial brown rings, streaks or splotches. They may have tears or be wilted. Favorable Comments: Condition -Fresh; lush; well-hydrated; Blemishes - clean with no disease, tears, insect damage, cuts. Unfavorable Comments: Condition - Flowers showing crepiness at margins; entire plant appears to have wilting petals. Blemishes - leaves exhibit red streaks (or black spots, etc); a few of the tepals are torn; small insect pierced holes on leaves; one leaf end broken off.
- D. **Grooming/Staging: (20 pts)**
1. **GROOMING (10 pts):** *actions taken by the exhibitor to improve the appearance of the specimen/s.* This is where the exhibitor looks for dirt, debris, webbing, water/chemical spots, brown edges, spent blooms, in short anything that could be taken off or cleaned/trimmed up to improve the appearance of the specimen. Here again the leaf & roots may be mentioned. Unlike many plants you may study, sheaths may be removed on stems without penalty and should be removed if dry and papery. Broken roots should be removed – obvious broken roots should be reason to deduct points. Favorable Comments: specimen is clean and neat; no debris or webbing on plant; no shattered pollen; no apparent chemical spray, no water marks and no mechanical damage. Unfavorable Comments: obvious insect webbing; under side of lowest leaves has debris present; brown edging on some leaves; rough and torn dried sheaths apparent; one shriveled bloom; 3 broken roots; pollen visible on petals.
 2. **STAGING (5 pts):** *presentation of the specimen/s.* Staging refers to both the pose of the specimen, the container, appropriateness of the container – no chips, cracks, no glue from labels, container appropriate for the size/type of specimen. Depending on what the Schedule allows for epiphytic types of orchids, these ‘containers’ (which could be nothing but netting or string & moss, or a wooden plaque) should be clean and offer the best pose possible for the orchid. In the rare occasions when the flower is cut, the specimen should be wedged so that it is well-posed, not too low in the container or sitting too high. Wedging should be unobtrusive. In containers, if stakes are present, they too should be unobtrusive and not sticking above the height of the specimen. Tiny, non-ornamental clips may be used to ‘attach’ flower stem to stake. Plants should be centered in the container in most container-grown plants but if the orchid being exhibited is of the type that grows in a line in only one direction (thus multiple pseudobulbs), then certainly this would not apply to the specimen (another reason to study possible types of orchids that may be shown at the show!). The bark (soil) should be even in the container and not spilling over the container lip. Double potting is allowed in container-grown specimens but should not be seen and certainly the lip of inner pot should never protrude above the exterior container. Favorable Comments: well-posed; container almost appears to be part of the specimen; container clean; bark well contained in netting container. Unfavorable Comments: flower stem leans heavily to left; cracks in container; obvious double potting; container too heavy and large for plant (or too light and delicate) stakes & clips are very decorative which detracts from the plant material itself.